

MACKINTOSH- HEMPHILL & CO.

Equipment for Iron and Steel Works

ROLLING MILLS.—Unexcelled facilities and large experience in the design and construction of Blooming Mills, Universal Mills for slabs and plates, Structural, Rail, Plate, Sheet and Merchant Mills.

CASTINGS.—Our foundry department includes separate iron, steel and brass foundries, besides pattern shop and laboratory. We make a specialty of heavy Steel Gears, Pinions and Superior Steel Rolls for rolling mills. We especially recommend our

MANGANITE (Steel Alloy) ROLLS as being of superior strength and wearing qualities, for Blooming, Billet, Structural and Continuous Mills and for Sheet Mill Roughing Rolls.

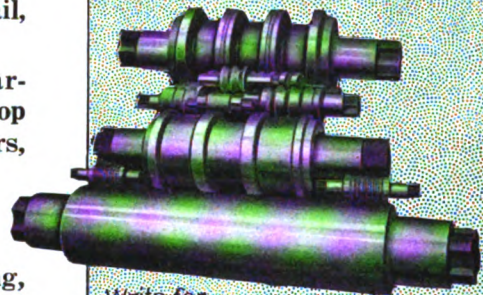
OTHER PRODUCTS.—Engines of various types, Punches and Shears, Hydraulic Presses, etc.

**Mackintosh-
Hemphill & Co.**

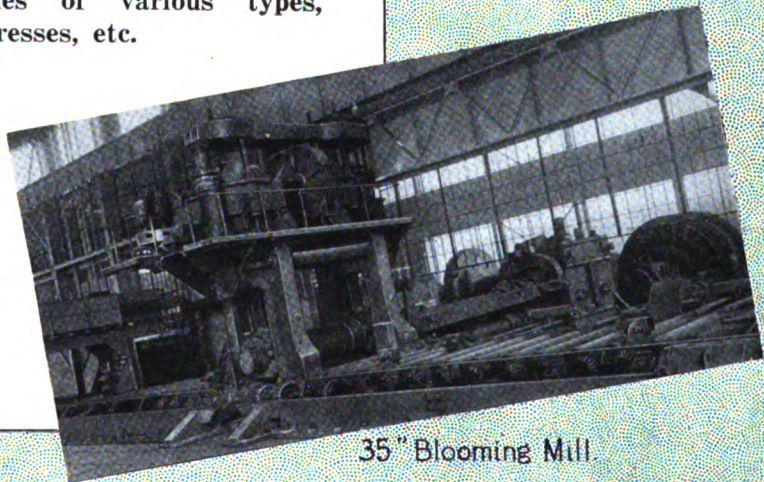
Pittsburgh, Pa.



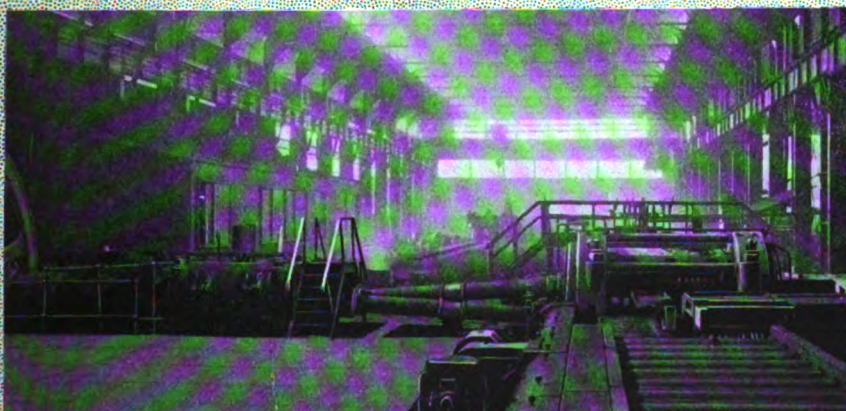
Steel Casting Helical Gear Rim,
mounted on Steel Casting Center



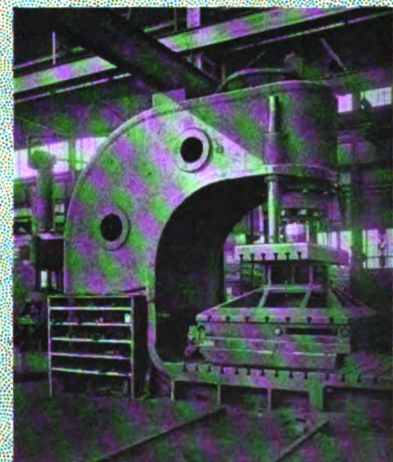
Write for
information about our Superior Steel
and Manganite Rolls.



35" Blooming Mill



26" Lamberton Continuous Running Billet Mill



400-Ton Hydraulic Flanging Press

The Blast Furnace and Steel Plant
TIN PLATE



NARROW SHEETS



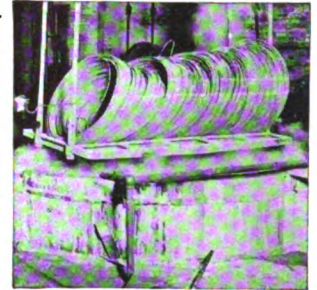
PIPE IN LONG LENGTHS



SMALL CASTINGS

IF YOU PICKLE PRODUCTS
OF
STEEL, IRON, BRASS, OR COPPER

(REGARDLESS OF THE SIZE OR SHAPE)



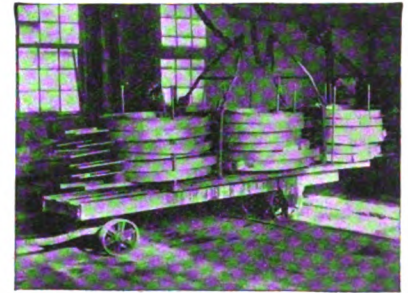
WIRE IN BUNDLES



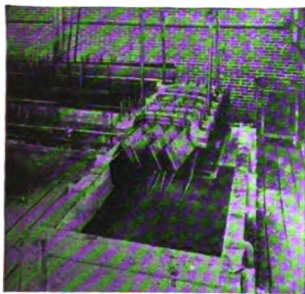
STAMPED PRODUCTS

You Will Be Interested in
Bulletin "M"

WHICH DESCRIBES THE MESTA
IMPROVED PICKLING MACHINE
AND EXPLAINS HOW YOU CAN
REDUCE YOUR PICKLING COSTS



STRIP STEEL COILS



PLATES AND FORGINGS

Write for a copy today.

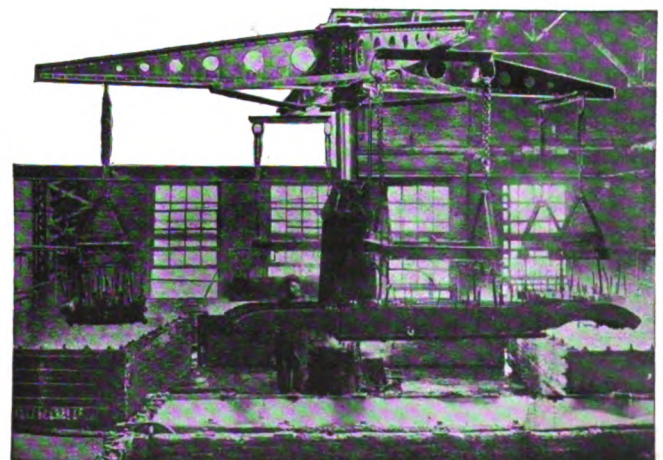
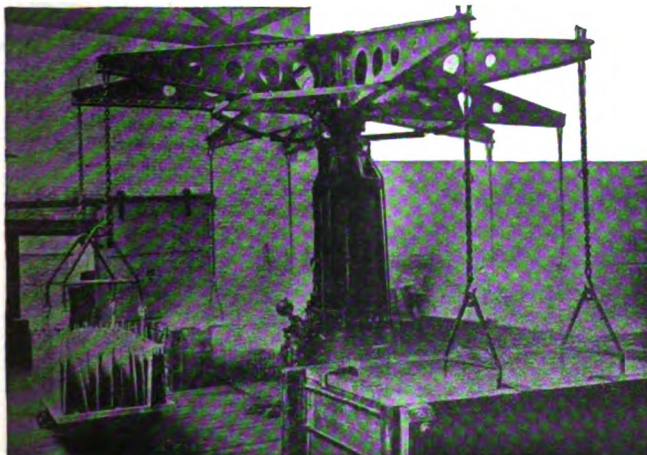
MESTA MACHINE CO.

PITTSBURGH, PA.

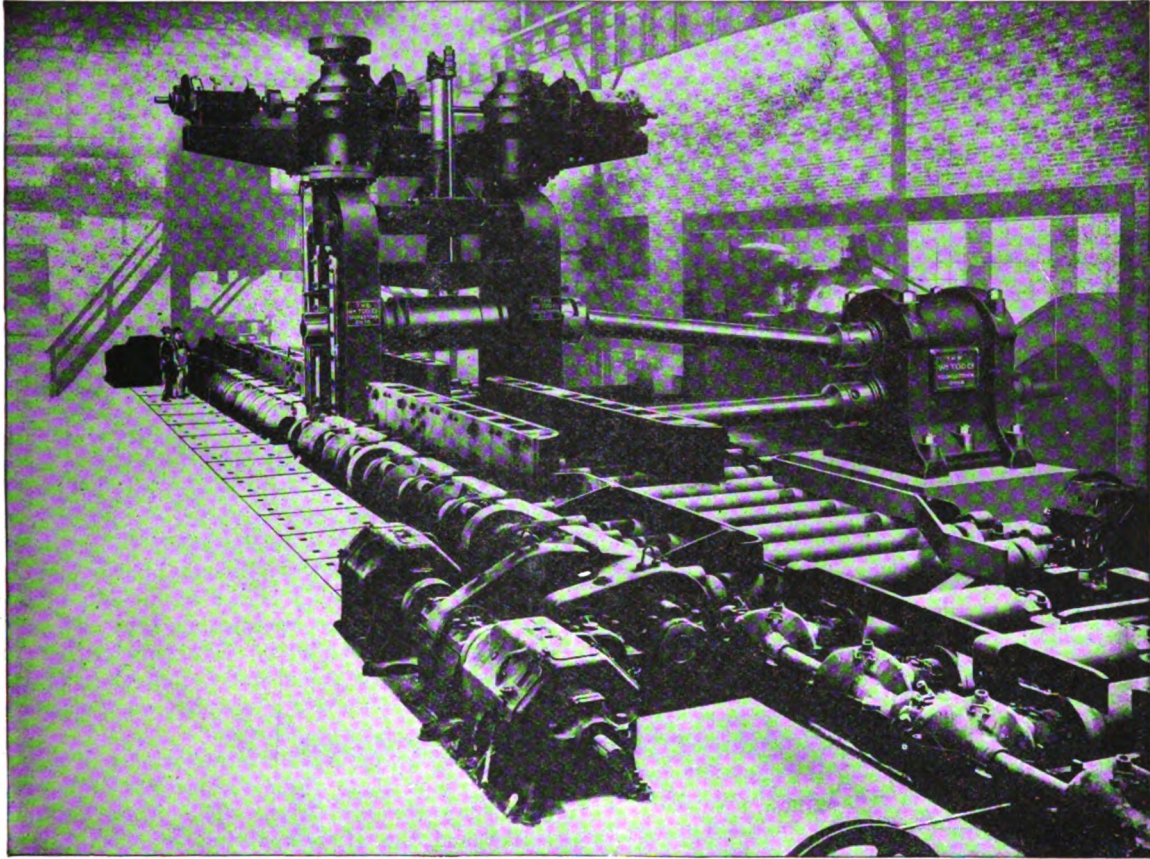
U. S. A.



HOOP STEEL



Rolling Mill Machinery



Tod Blooming Mills represent engine builders' standard of design and workmanship.

Tod patented spindles eliminates shock, are easily dismantled, and save a large percentage of power used in ordinary mills.

Accurately machined double helical pinions in a patented housing reduce upkeep and result in high efficiency.

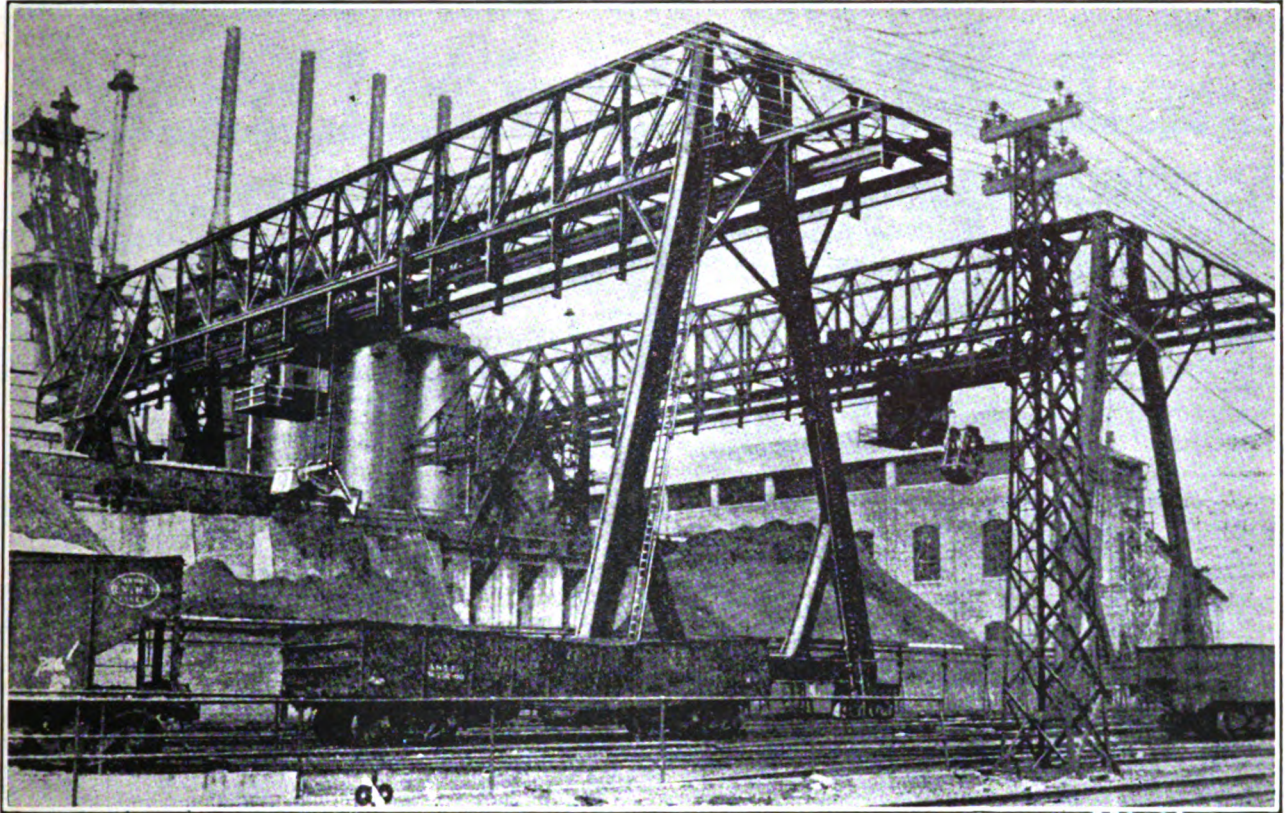
The William Tod Co.

YOUNGSTOWN, OHIO.

ROLLING MILLS

HYDRAULIC PRESSES, CONDENSERS.

ENGINES—Rolling Mill, Gas, Blowing, Pumping.



An Interesting Installation

These two Seven and One Half Ton, Nine-Motor Type Ore Bridges can be seen in the plant of the Pittsburgh Steel Company, Monessen, Pa.

Each has a 162-foot span with cantilever extensions of respectively 27 feet and 41 feet. They are the fastest of their kind in operation anywhere.

There is nothing in cranes that is too large or difficult for us to build. Large and special types are our "hobby."

"Alliance" Progressive Engineering Developments begin where others leave off.

Our new catalog describes many interesting cranes that we have built.

Ask us to send you one!

The Alliance Machine Company

Pittsburgh ALLIANCE, OHIO Birmingham

39-A

Speed Up with a Cleveland



**This 15-Ton 3-Motor 72 Ft. Span Crane Designed With High Speed:
Bridge at 400 Ft. Per Min.
Hoist 35 Ft. Per Min.**

And Dynamic Braking for Hoist, Thus Eliminating Mechanical Brakes, Is One of Six Cranes Furnished One of the Large Steel Plants in This Country.

Are you fully equipped with cranes of this type?

**We Can Convince You That
The *Cleveland* Crane is the Crane for Your Plant
Will You Give Us a Chance?**

The Cleveland Crane & Engineering Co.
WICKLIFFE, OHIO.

NEW YORK OFFICE
30 Church Street.

PITTSBURGH OFFICE
First National Bank Bldg.

Ashland Security



One of the Five Reasons (or Plants) for Ashland Security.

Service demands on fire brick often subject it to many tests which are far greater than those for which it may have been designed to meet in ordinary usage. It is at this critical point that "Ashland Security" asserts itself and permits the furnace to continue its operation, whereas a shut down would have been inevitable.

Like Grape Nuts "There's a Reason"

Security—Because it secures against sudden extremes and violent changes of temperature without pulling out of place or disintegrating.

Security—Because it secures against the corrosive action of slags rich in metallic oxides, and supports great loads under high heats without checking or spalling.

Security—Because it is accurately made of *weathered* Kentucky clays (screened) and hard enough to stand the wear and cutting action of the charge.

When it comes to reducing the ore in the furnace you need a lining in which have been fully anticipated these exacting demands of service, in other words you need

"Ashland Security"

Line with the Ashland Line

THE ASHLAND FIRE BRICK CO.

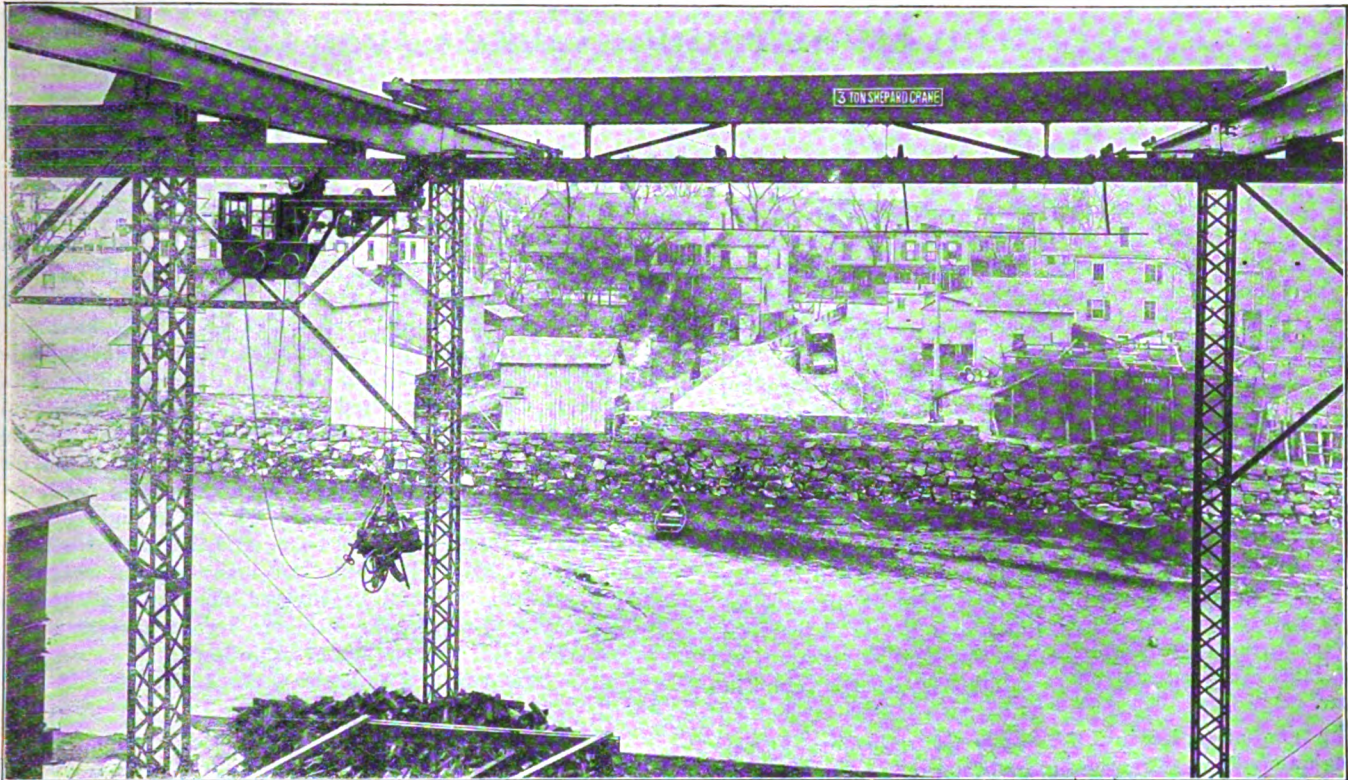
(Incorporated 1886)

ASHLAND,

-

-

KENTUCKY



Shepard Transfer Crane

The Shepard Transfer Crane with spur trackage is efficient for yard service in using irregular areas for storage and carrying materials between the yard and shop without rehandling.

Send for bulletin No. 250—there is one that will cover your requirements.

SHEPARD
ELECTRIC CRANE & HOIST CO.

NEW-YORK MONTOUR FALLS, N.Y. PITTSBURG
PHILADELPHIA CHICAGO
BOSTON. BALTIMORE. BIRMINGHAM, ALA. SAN-FRANCISCO. MONTREAL,
MELBOURNE, AUSTRAL. LONDON.

KOPPERS OVENS

THE DOMINION IRON &
STEEL CO. has awarded to
H. KOPPERS & CO. a contract
for 120 KOPPERS OVENS with
a complete by-product recovery
plant to be built at Sidney, Nova
Scotia, Canada.

H. KOPPERS COMPANY
Pittsburgh, Pa.

*Builders of By-Product Coke Plants
Tar Distilling Plants
Benzol Recovery Plants*

TITANIUM TALKS

No. 1

The use of Titanium as a deoxidizer and cleanser of Steel began in 1908. For some two or three years Titanium Treatment was confined almost exclusively to Rail Steel.

To-day every grade of Steel is being treated with Titanium—by far the greater tonnage being used in other than Rail Steel.

The Titanium Alloy Mfg. Company

Niagara Falls,
Pittsburgh Office: Oliver Building
New York Office: 15 Wall Street



New York
Chicago Office: Peoples Gas Building
Buffalo Office: Marine Bank Building

Agents for Great Britain and Europe: T. Rowlands & Co., Ltd., Sheffield, Eng.

"DAMASCUS"

—Stands for Economy and Reliability in— MILL BEARINGS

Different conditions of pressure, temperature, speed and lubrication do demand different and accurate bearing mixtures. May-be in the old days the brass foundry around the corner was good enough, but to-day with ever-increasing speed and rolling pressures, guess work mixtures are not satisfactory nor even cheap, whatever the first cost may be.



Damascus Mill Bearings have been the standard in the mill industry for the past 40 years, first, because of a close study of the individual conditions and, second, because of the accurate maintenance of the proper formula after this has been determined. Uniform and satisfactory bearing performance demands virgin metal mixtures and it is on this basis only that bearing satisfaction and economy is obtained.

Damascus Mill Bearings are made only from virgin metals to the exact formula for your particular conditions. Our long experience as exclusive bearing specialists has qualified us for judging your needs and our recommendations are not in any sense experimental, as they are based on practically identical conditions at another customer's similar mill.

We will gladly quote you on material for which we guarantee service and economy and we know that the price will be but slightly, if any, higher than you are now paying.

Write Us To-day.

—Damascus Bronze Company—
Pittsburgh

MACKINTOSH- HEMPHILL & CO.

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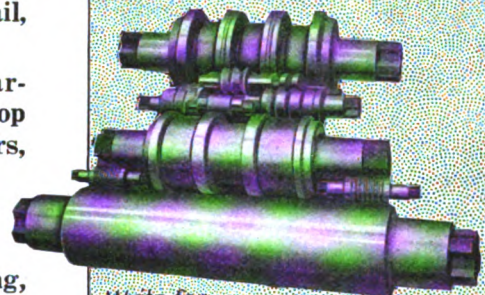
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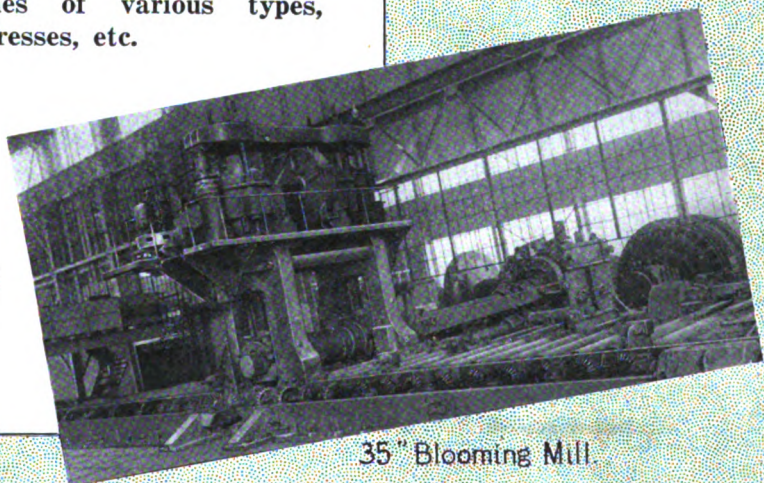
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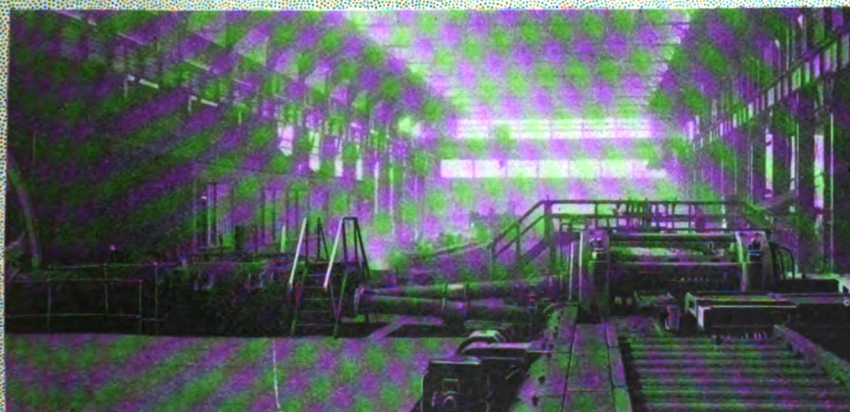
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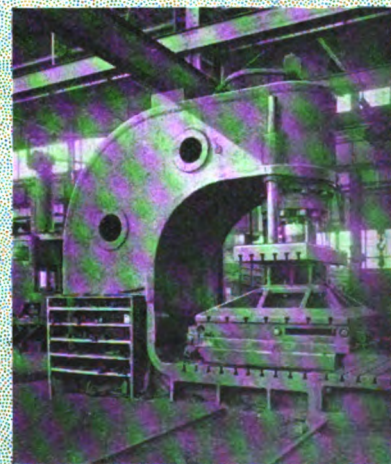
Pittsburgh, Pa.



35" Blooming Mill

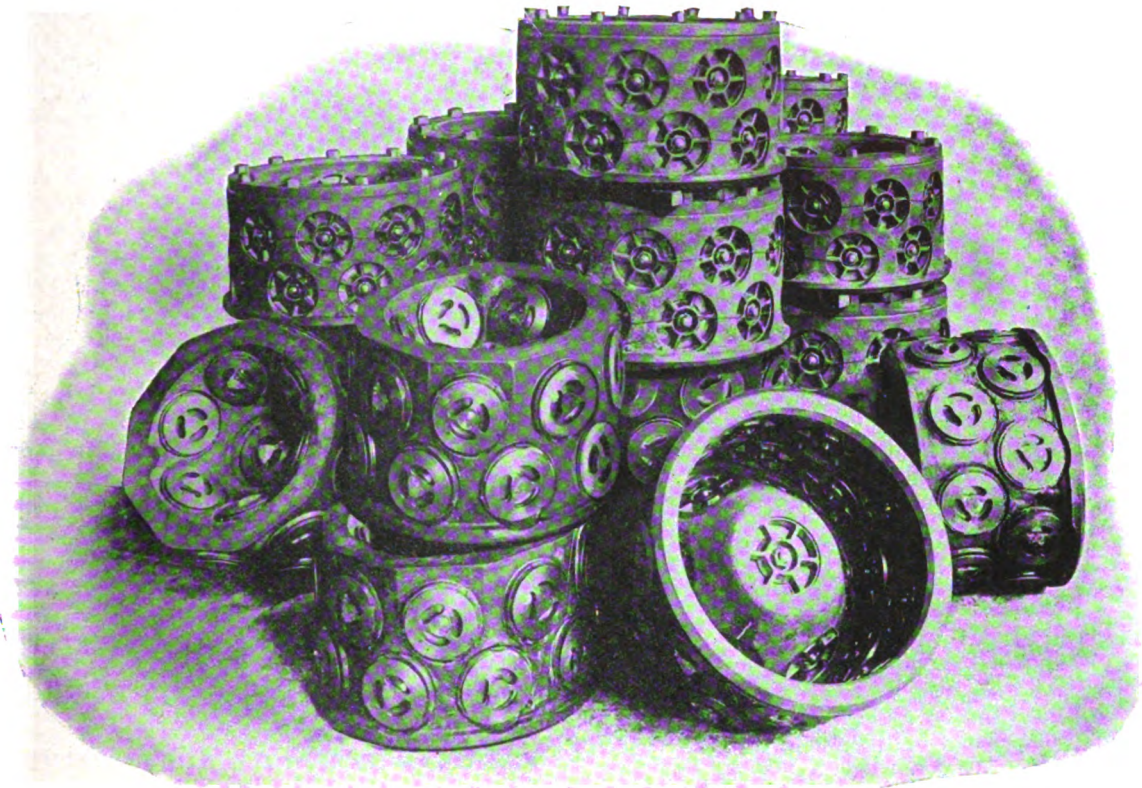


26" Lamberton Continuous Running Billet Mill



400-Ton Hydraulic Flanging Press

INCREASED EFFICIENCY IN AIR EQUIPMENT



Valve Cages Used in Replacing Cup or Poppet Type Blowing Engine Valves with Mesta Automatic Plate Valves (Iversen Patent).

MANY Owners of Blowing Engines, Air Compressors, Ammonia Compressors, and Vacuum Pumps are increasing the efficiency of their equipment by replacing old style air valves with Mesta Automatic Plate Valves. The change is both simple and inexpensive, and often the valves or valve cages can be inserted without changing the heads.

THESE Valves have no rubbing surfaces, hence they stay tight and use does not lower their high efficiency. No lubrication or adjustment is required.

Write for Bulletin "D"

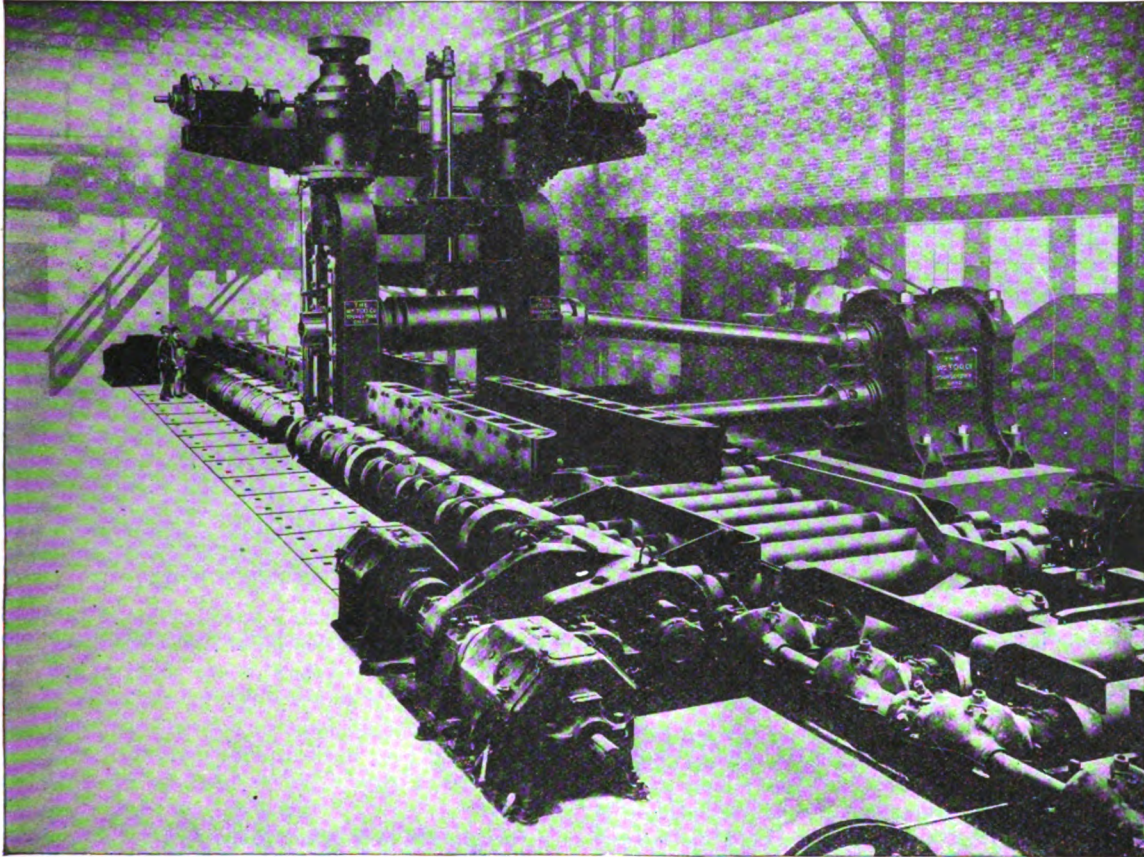
MESTA MACHINE COMPANY

PITTSBURGH, PA., U. S. A.

Designers and Builders of

Gas and Steam Engines, Blowing Engines, Rolling Mill Machinery, Forging Presses, Shears, Saws, Cut and Machine Molded Gears, Iron and Steel Castings, Etc.

Rolling Mill Machinery



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Tod patented spindles eliminate shock, are easily dismantled, and save a large percentage of power used in ordinary mills.

Accurately machined double helical pinions in a patented housing reduce upkeep and result in high efficiency.

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YOUNGSTOWN, OHIO.

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HYDRAULIC PRESSES, CONDENSERS.

ENGINES—Rolling Mill, Gas, Blowing, Pumping.



Another “Alliance” Economizer

¶ This Seven and One-half Ton, Eight Motor Type Ore Bridge with 167-foot span, was installed by us in the plant of the Pennsylvania Steel Co., Steelton, Pa. It has cantilever extensions of respectively 39 feet 3½ inches, and 52 feet.

¶ If you are up against a difficult proposition, and wish to have it solved RIGHT, send us your specifications, because “Alliance” Progressive Engineering Developments begin where others leave off.

¶ We are the largest manufacturers of the world's largest cranes.

Ask us to send you our New Catalog.

The Alliance Machine Company

Pittsburgh

Alliance, Ohio

Birmingham

©“Line With The Ashland Line”

Maximum Tonnage Per Lining

is limited by the quality of the refractories built in your various heating furnaces. Whether used in blast furnace lining or in the hearth—in a stove or in a heating furnace—in any place where high temperature, corrosive slag or gases laden with abrasive dust are present.

Ashland Fire Brick

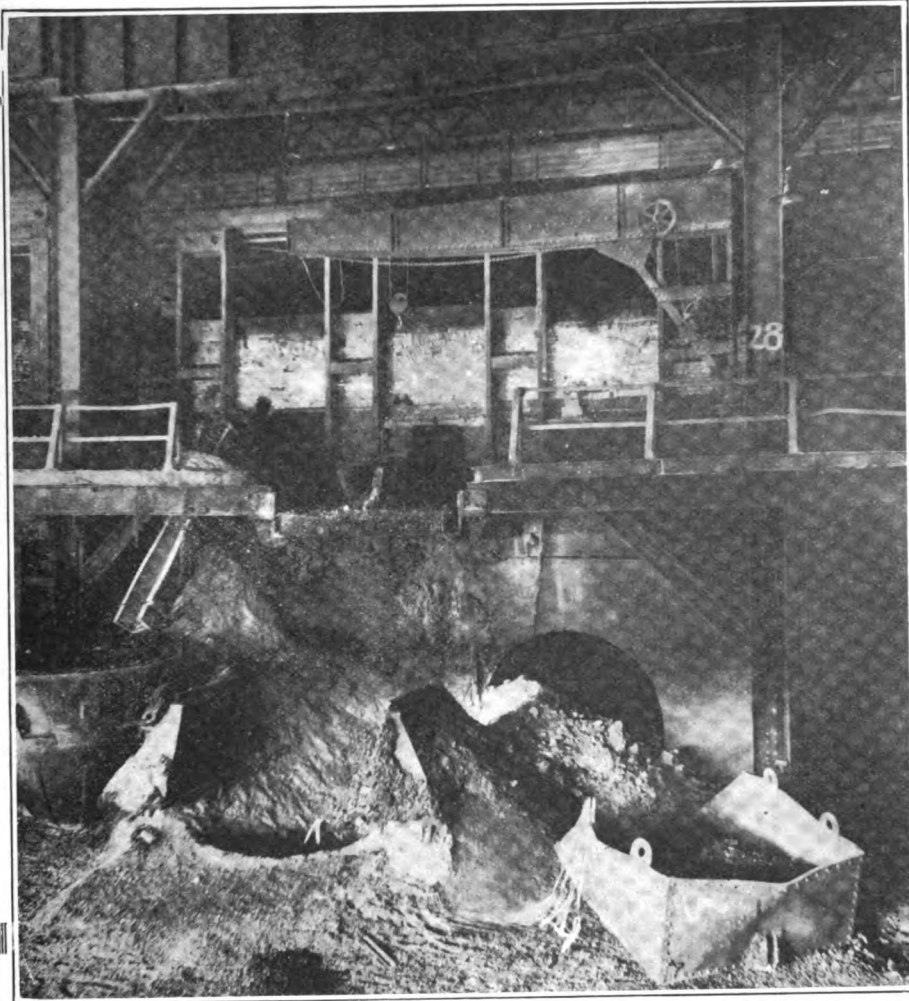
will let you drive your equipment to the limit. Ashland Fire Brick is uniform—with a high fusion point—carries a heavy load without checking or spalling, is unaffected by changes in temperature, stands the cutting action of heavy charges—suffers no reduction by the corrosive action of slags rich in metallic oxide, its volume is constant, Ashland Bricks will not shrink.

Ashland Brick has established this standard and maintains uniformity by constant, careful attention to the selection of material, proper weathering, measuring, mixing, molding, drying, and burning.

Ask the man who uses them.

ASHLAND FIRE BRICK COMPANY
ASHLAND, KENTUCKY

©“Line With The Ashland Line”



Shepard Jib Crane

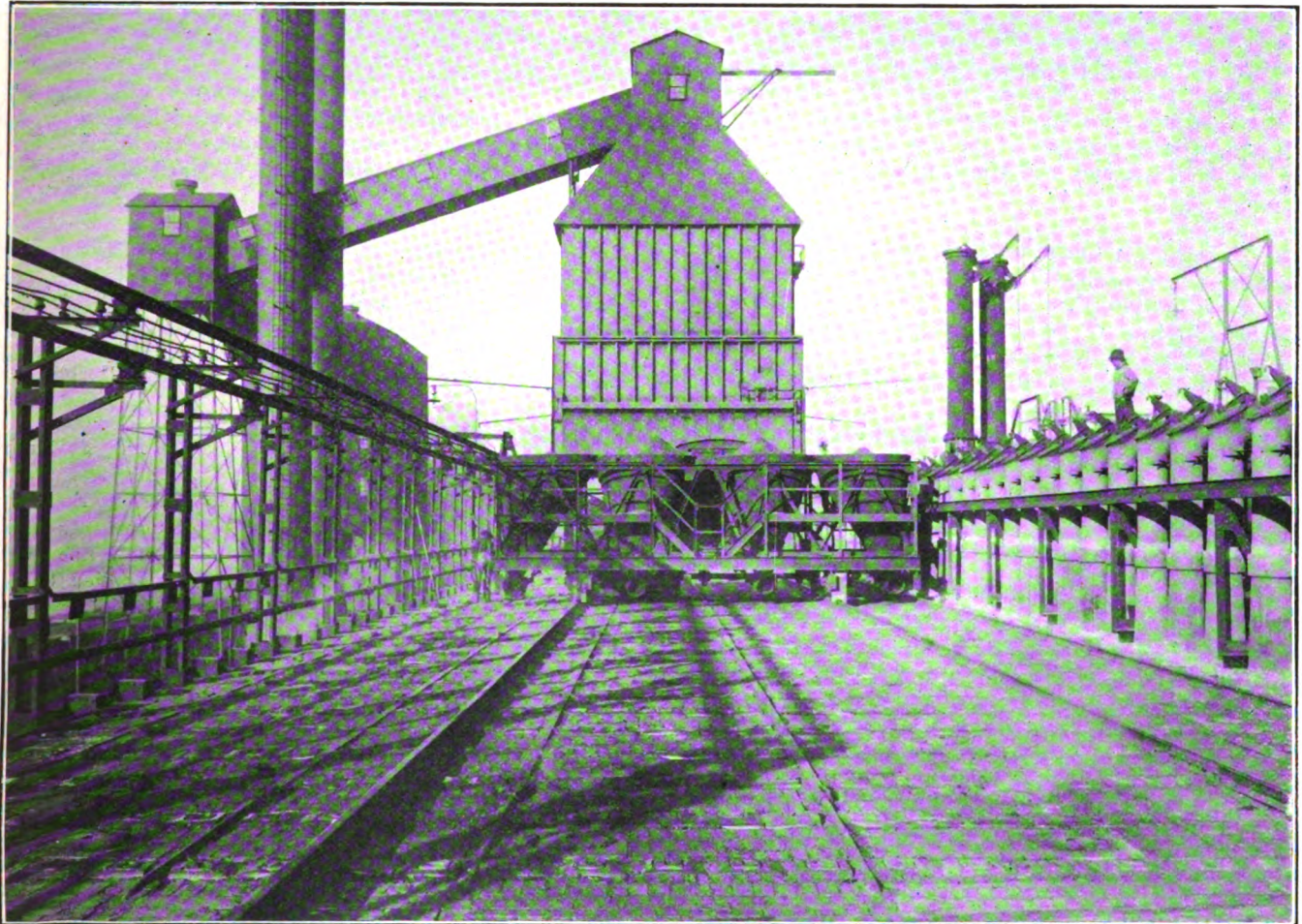
The above illustration shows one of an installation of six Shepard Jib Cranes in a large Steel Plant—used at the open hearth to handle the runner spout.

This type of Shepard Jib Crane facilitates the immediate removal of the runner when desired—its **absolute dependability**, together with the Shepard features of construction—one of which is that the hoisting unit is located so that it is not near the heat during the pour off, is one reason why it is replacing other types.

Send To-day for further information.

SHEPARD
ELECTRIC CRANE & HOIST CO.
NEW-YORK MONTOUR FALLS, N.Y. PITTSBURG
PHILADELPHIA CHICAGO
BOSTON, BALTIMORE, BIRMINGHAM, ALA., SAN-FRANCISCO, MONTREAL,
MELBOURNE, AUSTRAL. LONDON.

KOPPERS OVENS



Plant of Toledo Furnace Company, Toledo, Ohio.

H. KOPPERS COMPANY
PITTSBURGH, PA.

Builders of By-Product Coke Plants

TITANIUM TALKS

No. 2

Steel makers appreciate the value of Ferro Carbon-Titanium.

To-day more of this Deoxidizer and Cleanser is being used by steel makers in products for which they assume full responsibility than in those where Titanium treatment is specified by consumers.

Certainly the Steel Maker is in the better position to appreciate the real value of Titanium than the consumer and would not use it unless he was sure of either super quality or decreased costs—in most cases he is assured of both.

The Titanium Alloy Mfg. Company

Niagara Falls,
Pittsburgh Office: Oliver Building
New York Office: 15 Wall Street



Agents for Great Britain and Europe: T. Rowlands & Co., Ltd., Sheffield, Eng.

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We will gladly quote you on material for which we guarantee service and economy and we know that the price will be but slightly, if any, higher than you are now paying.

Write Us To-day.

—Damascus Bronze Company—
Pittsburgh



"SPRACO" SYSTEM AT THE ATLANTIC STEEL PLANT

Remarkable economies are being effected by the "Spraco" Water Cooling System at the plant of the Atlantic Steel Company, of Atlanta, shown in the picture above. The capacity of this system is 9,000 gallons per minute. A 32-degree drop in temperature is effected, the water being cooled from 114 degrees to 82 degrees. The "Spraco" Cooling System increases the cooling capacity of any pond thirty-six times, at a

lower cost than a cooling tower, and at a lower operating cost and lower depreciation. An average vacuum of 28" can be maintained the year round if specifications are followed and the condenser operates efficiently. The "Spraco" system will generally pay a yearly return of 50% on its cost. If the construction conforms to our plans we guarantee results.

Send to-day for interesting booklet.

SPRAY ENGINEERING CO.,

93 Federal St., Boston, Mass.

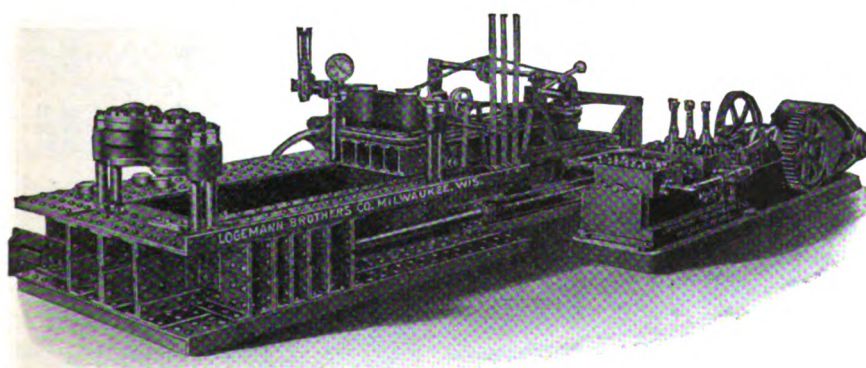
Atlanta, Ga.—Earl F. Scott, 702 Candler Bldg.
Birmingham, Ala.—McClary-Jemison Mch. Co.
Chicago, Ill.—Charles M. Howe, 712 Peoples Gas Bldg.
Cincinnati, Ohio.—Henry P. Thompson, Mercantile Library Bldg.
Cleveland, Ohio.—Glenn S. Groves, 1157 Leader-News Bldg.

Indianapolis, Ind.—I. C. DeHaven, State Life Bldg.
Philadelphia, Pa.—H. F. Sanville, 1326 Chestnut street.
Pittsburgh, Pa.—H. A. Rapelye, Oliver Bldg.
St. Louis, Mo.—Baumes-McDeavitt Mch. Co., 1984 Ry. Exchange Bldg.
Toledo, Ohio.—Power Equipment Co., 712 Second Nat. Bank Bldg.

HIGHEST PRICES PAID

for scrap metals

when bundled with a Logemann Baler



Our machine has replaced practically all competitive machines; it is the most efficient, rapidly operating and powerful press ever built for the purpose of bundling sheet metal scrap.

Will pay for itself in a very short time. Write for particulars.

**Hydraulic Presses and
Pumps.**

The Best Press ever Built for the purpose.

LOGEMANN BROTHERS COMPANY

3120 Burleigh Street, Milwaukee, Wis.

NEW YORK—50 Church St.
CLEVELAND—Rockefeller Bldg.

CHICAGO—Old Colony Bldg.
ST. LOUIS—Chemical Bldg.

MACKINTOSH- HEMPHILL & CO.

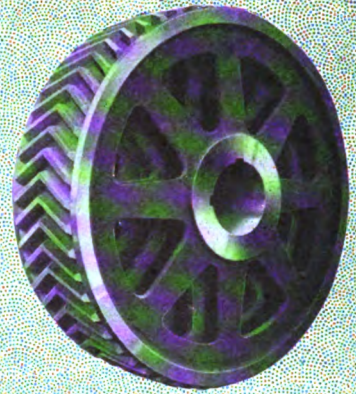
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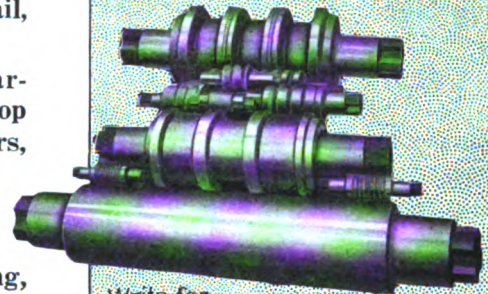
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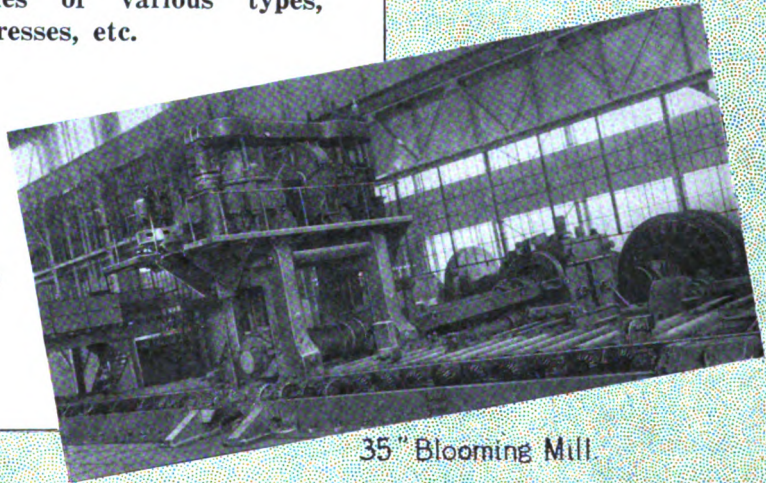
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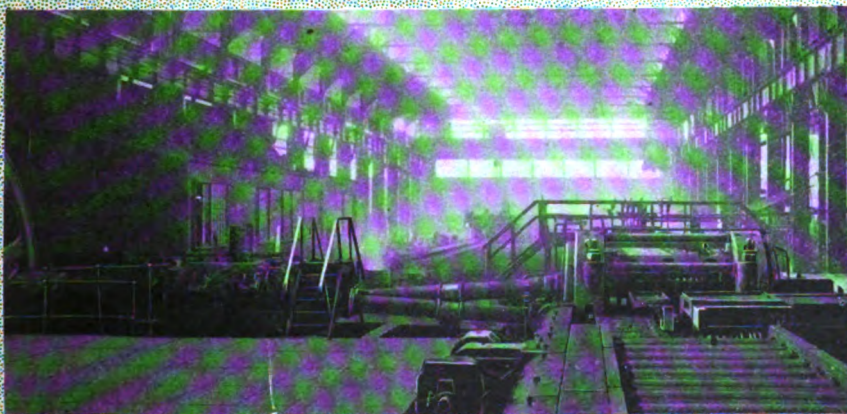
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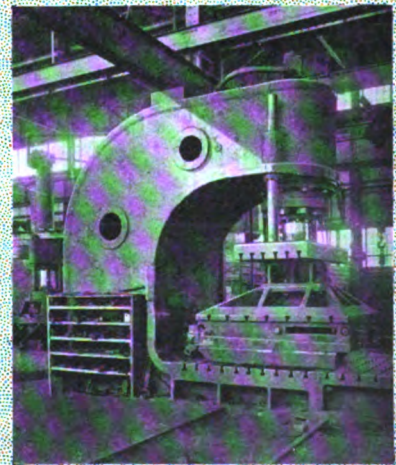
Pittsburgh, Pa.



35" Blooming Mill

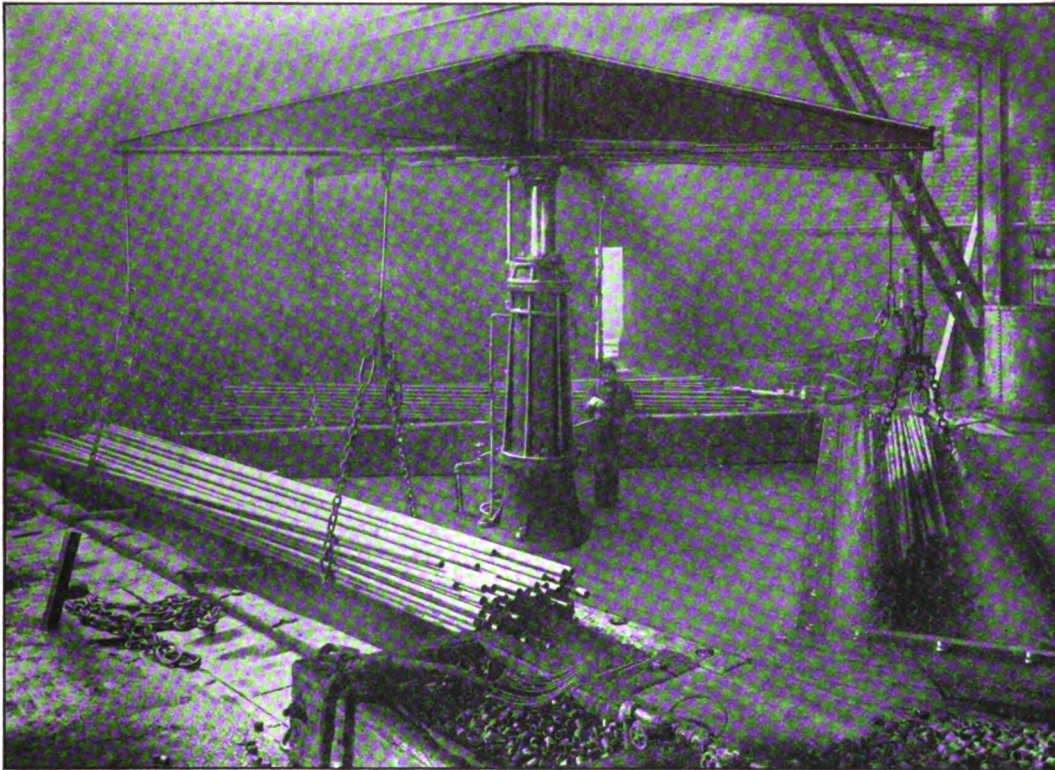


26" Lamberton Continuous Running Billet Mill



400-Ton Hydraulic Flanging Press

How Do You Pickle Your Pipe and Tubes?



PPIPE, Conduit, and Tubing, in either short or long lengths, is pickled most thoroughly and efficiently on the **Mesta Improved Pickling Machine**. By its use all surfaces are uniformly cleaned in a shorter time and with less labor and acid than by any other method.

THESE Machines are in operation in a large number of manufacturing plants pickling with uniform success such materials as Forgings, Small Castings, Sheets, Plates, a great variety of Pressed and Stamped Products.

THE Installation is generally paid for in a short time by the great saving in pickling costs.

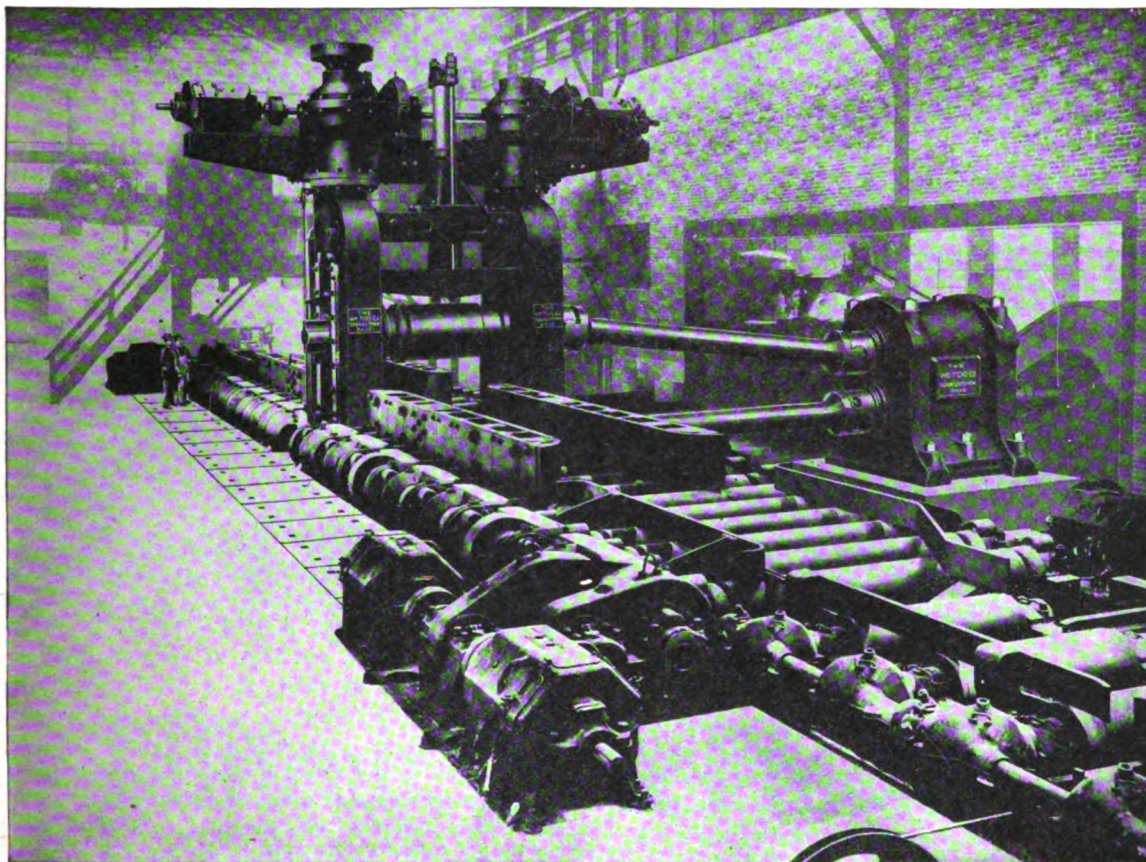
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MESTA MACHINE COMPANY
PITTSBURGH, PA., U. S. A.

DESIGNERS AND BUILDERS

Gas and Steam Engines, Rolling Mill and Steel Works Machinery, Condensers, Iron and Steel Castings, Gears, Forging Presses, Shears, Saws, Etc.

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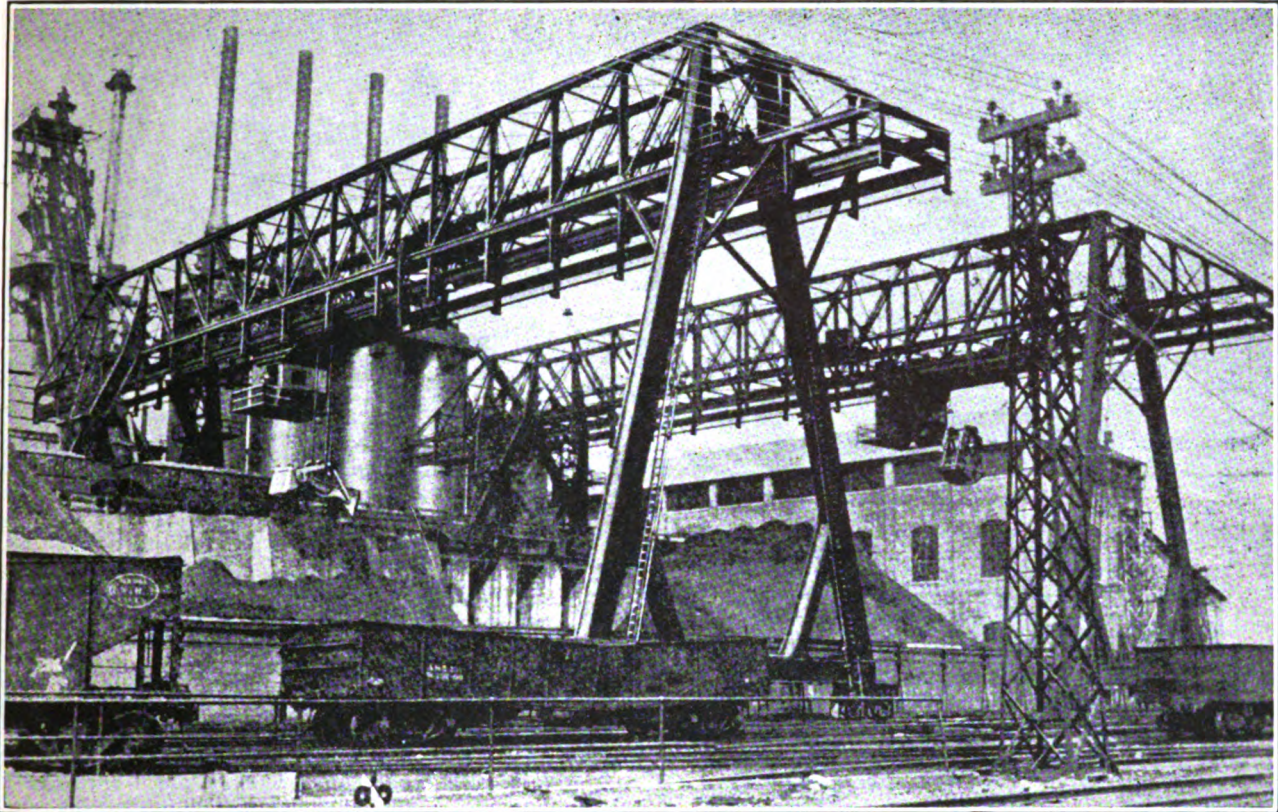
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HYDRAULIC PRESSES, CONDENSERS.

ENGINES—Rolling Mill, Gas, Blowing, Pumping.



Difficult Crane Problems

large and special types, one example shown in the illustration above, are the "Hobby" of "Alliance" Engineers.

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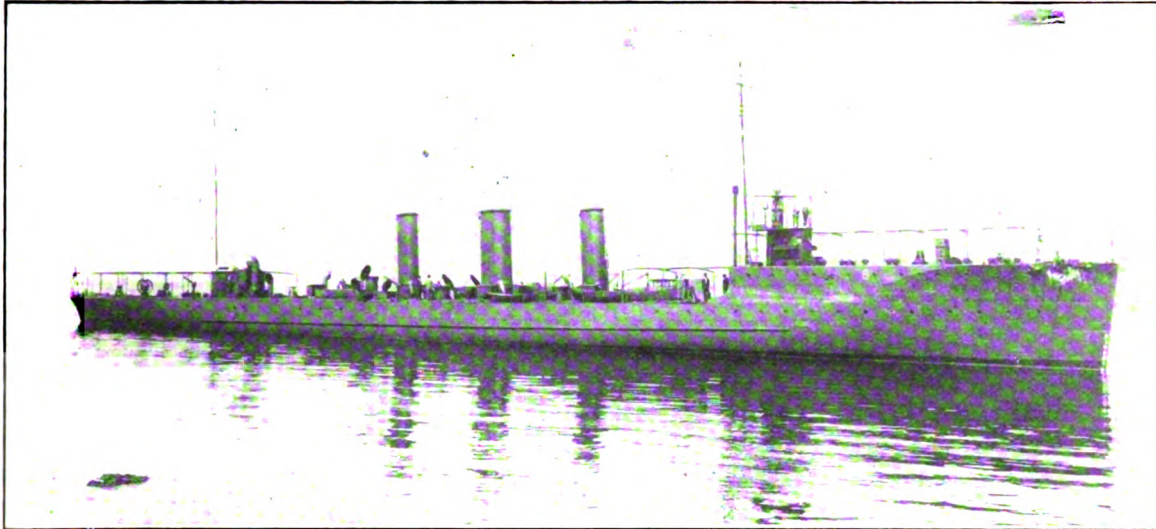
The Alliance Machine Company

Pittsburgh

Alliance, Ohio

Birmingham

Why Did the Builders of the
U. S. Destroyers "Roe" and "Terry"
Install **Ashland Brick** Throughout Their Furnaces



The U. S. Torpedo Boat Destroyer "Terry."

BECAUSE they know they'll be right when they have to make a quick repair thousands of miles from home.

Here's what they wrote us:

"We found these bricks very satisfactory for the purpose and there were practically no evidences of cracking or splitting."

Every **ASHLAND BRICK** is moulded piece by piece from *weathered* clay that is finely ground, thoroughly mixed and carefully tempered. They are burned true to form without warp or twist.

The Ashland Brick for Quality

THE ASHLAND FIRE BRICK CO.

ASHLAND,

KENTUCKY

(Incorporated 1886.)



Shepard Jib Crane

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PHILADELPHIA CHICAGO
BOSTON. BALTIMORE. BIRMINGHAM, ALA.. SAN-FRANCISCO. MONTREAL.
MELBOURNE. AUSTRAL. LONDON.

H. KOPPERS COMPANY

PITTSBURGH, PA.

Builder of

KOPPERS BY-PRODUCT COKE OVENS

Ammonia Recovery Apparatus
Benzol Recovery Plants
Tar Distilling Plants

Consulting Engineers on the Operation of
By-Product Coke Plants and Auxiliaries

TITANIUM TALKS

No. 3

Over One Million Tons of Steel were treated with Ferro Carbon Titanium during 1915—and this tonnage will be doubled this year.

The Steel Maker must be given full credit for this serious effort to improve the Quality of his Product.

The Titanium Alloy Mfg. Company

Niagara Falls,
Pittsburgh Office: Oliver Building
New York, City Investing Bldg., 165 Broadway



New York
Chicago Office: Peoples Gas Building
Buffalo Office: Marine Bank Building

Agents for Great Britain and Europe: T. Rowlands & Co., Ltd., Sheffield, Eng.

"DAMASCUS"

— Stands for Economy and Reliability in —
MILL BEARINGS

Different conditions of pressure, temperature, speed and lubrication do demand different and accurate bearing mixtures. May-be in the old days the brass foundry around the corner was good enough, but to-day with ever-increasing speed and rolling pressures, guess work mixtures are not satisfactory nor even cheap, whatever the first cost may be.



Damascus Mill Bearings have been the standard in the mill industry for the past 40 years, first, because of a close study of the individual conditions and, second, because of the accurate maintenance of the proper formula after this has been determined. Uniform and satisfactory bearing performance demands virgin metal mixtures and it is on this basis only that bearing satisfaction and economy is obtained.

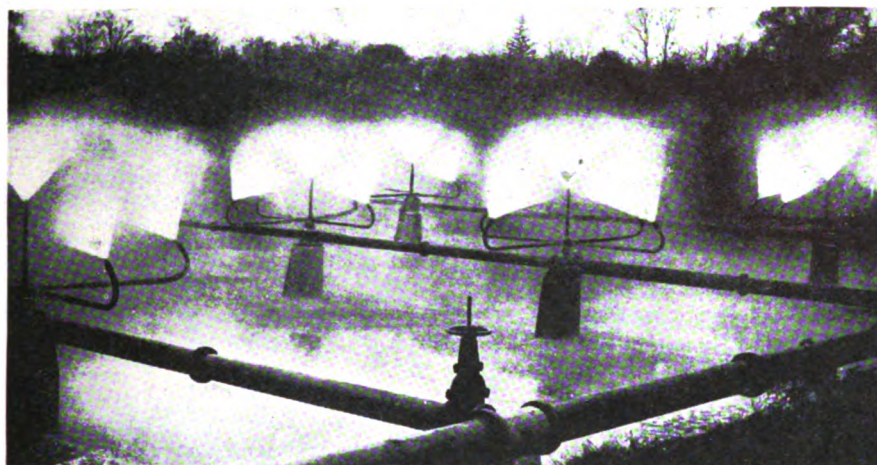
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We will gladly quote you on material for which we guarantee service and economy and we know that the price will be but slightly, if any, higher than you are now paying.

Write Us To-day.

— **Damascus Bronze Company** —
Pittsburgh

TO ECONOMIZE ON WATER



Plenty of cool water for your condensers, water-jackets, evaporators, and transformers can be economically supplied by the

“Spraco” Cooling Systems for Cooling Hot Water

The temperature of the hot condensing water is reduced by spraying it into the air so that when it falls into the cooling pond it is sufficiently cooled to be used again. The circulation is continuous, yet tests have shown that the yearly water loss by drifting spray averages less than 1½% of the condensing water used. The condensed steam of the boiler feed, averaging 2% of the condensing water added to the pond supply, easily offsets the water loss. The operation of Spraco Cooling Systems requires

less than 1½% of the power generated by the engine. Fire protection, where water is scarce, is afforded by a Spraco Cooling pond to which the fire pumps can be connected. Hundreds of Spraco Cooling Systems are operating satisfactorily in nearly every state in the United States and in Canada, Mexico, Cuba and South Africa. Spraco Cooling Systems are designed and constructed to supply your needs and the results are guaranteed.

Send for book describing Spraco System for Cooling Condenser Water.

Spray Engineering Company
93 Federal Street

Engineers

Boston

Manufacturers

There is nothing in Cranes too large or too difficult for us to build, as we are the largest manufacturers of the world's largest cranes.



"Alliance" Cranes are backed by standards of value. Ask a few users what they think of them—then let us tell you about "Alliance."

Test load of 400500 lbs. on 175-Ton Patented Four-Girder Ladle Crane, of which type alone we have built upwards of 150.

The Largest Cranes of This Type Ever Built

In addition to our line of Standard Cranes, for every service from 5 to 200 tons capacity, we build more large and special types than all others combined. This is significant, since the big earning capacities of the large industries are at stake, and they must have the best Cranes available.

The new "Alliance" catalog tells and illustrates many interesting installations—send for a copy to-day.

The Alliance Machine Company

Pittsburgh

Alliance, Ohio

Birmingham

Cooperate:—Give us Credit.

MACKINTOSH- HEMPHILL & CO.

Equipment for Iron and Steel Works

ROLLING MILLS.—Unexcelled facilities and large experience in the design and construction of Blooming Mills, Universal Mills for slabs and plates, Structural, Rail, Plate, Sheet and Merchant Mills.

CASTINGS.—Our foundry department includes separate iron, steel and brass foundries, besides pattern shop and laboratory. We make a specialty of heavy Steel Gears, Pinions and Superior Steel Rolls for rolling mills. We especially recommend our

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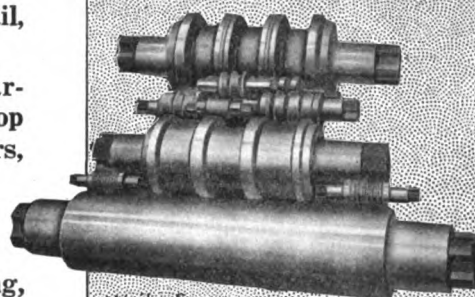
OTHER PRODUCTS.—Engines of various types, Punches and Shears, Hydraulic Presses, etc.

**Mackintosh-
Hemphill & Co.**

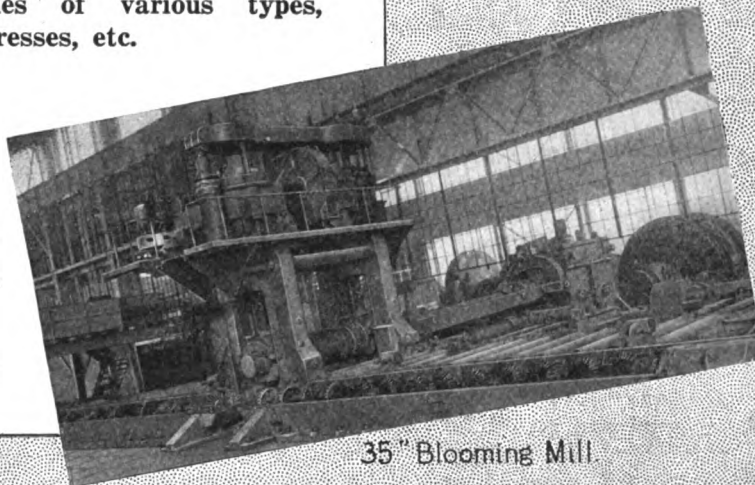
Pittsburgh, Pa.



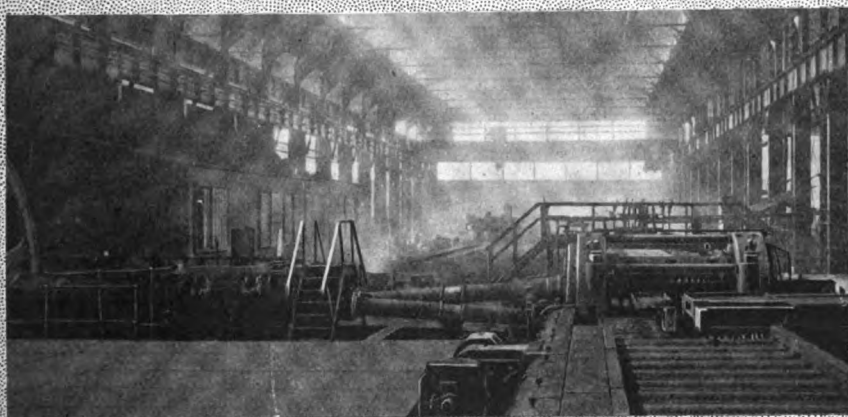
Steel Casting Helical Gear Rim,
mounted on Steel Casting Center



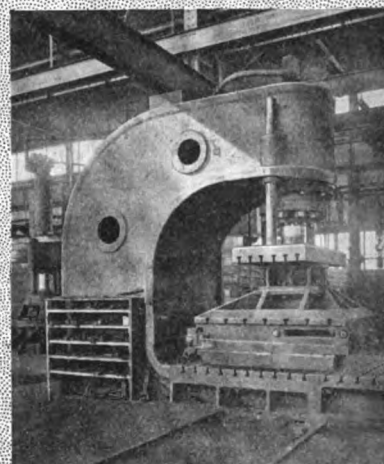
Write for
information about our Superior Steel
and Manganite Rolls.



35" Blooming Mill



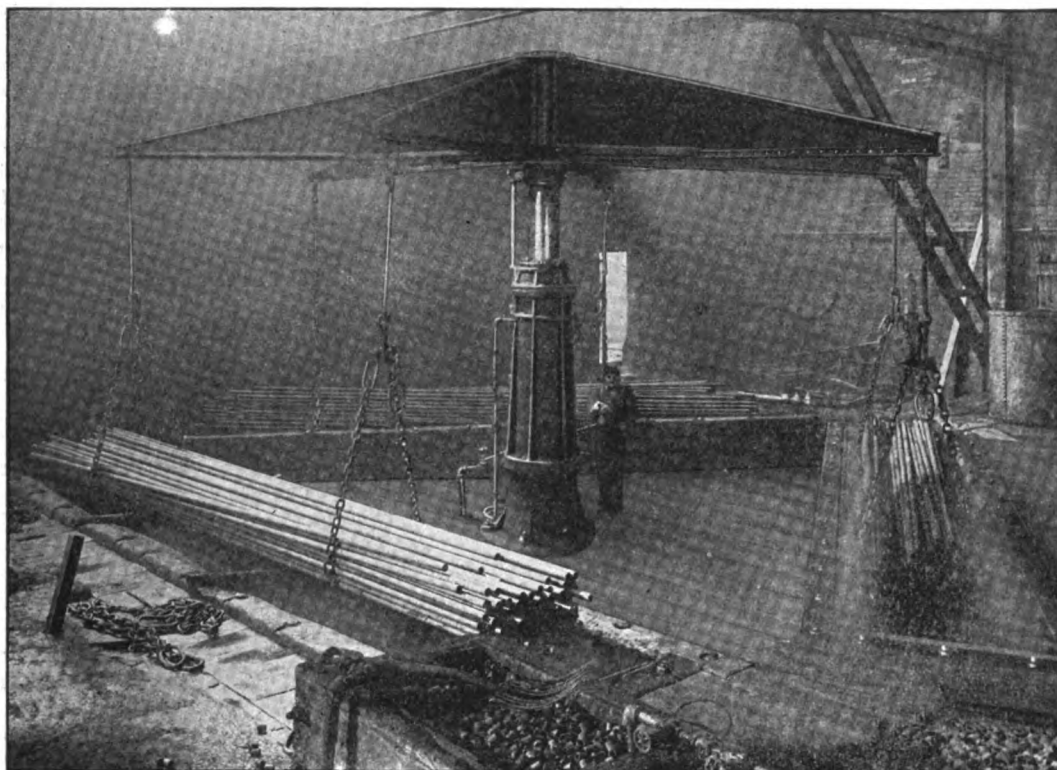
26" Lamberton Continuous Running Billet Mill



400-Ton Hydraulic Flanging Press

Cooperate:—Give us Credit.

How Do You Pickle Your Pipe and Tubes?



PPIPE, Conduit, and Tubing, in either short or long lengths, is pickled most thoroughly and efficiently on the **Mesta Improved Pickling Machine**. By its use all surfaces are uniformly cleaned in a shorter time and with less labor and acid than by any other method.

THESE Machines are in operation in a large number of manufacturing plants pickling with uniform success such materials as Forgings, Small Castings, Sheets, Plates, a great variety of Pressed and Stamped Products.

THE Installation is generally paid for in a short time by the great saving in pickling costs.

Write for Bulletin "M"

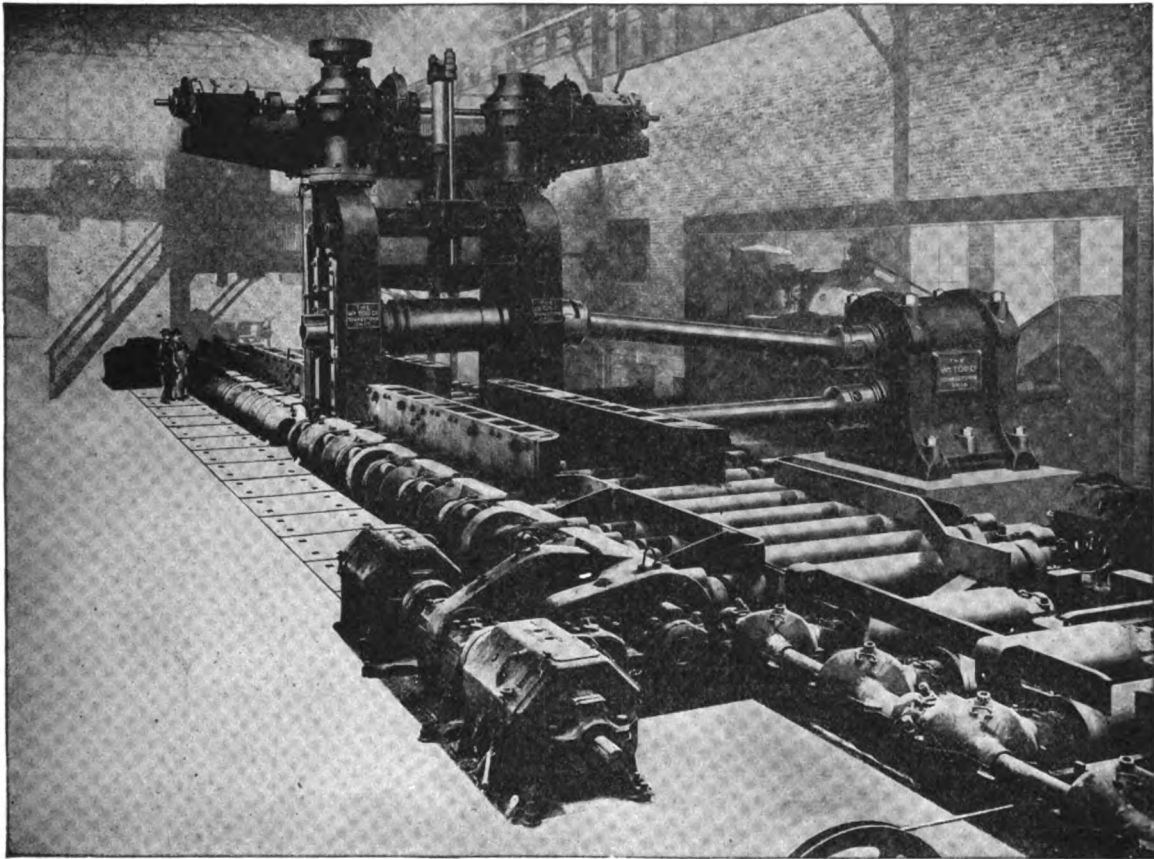
MESTA MACHINE COMPANY PITTSBURGH, PA., U. S. A.

DESIGNERS AND BUILDERS

Gas and Steam Engines, Rolling Mill and Steel Works Machinery, Condensers, Iron and Steel Castings, Gears, Forging Presses, Shears, Saws, Etc.

Cooperate:—Give us Credit.

Rolling Mill Machinery



Tod Blooming Mills represent engine builders' standard of design and workmanship.

Tod patented spindles eliminate shock, are easily dismantled, and save a large percentage of power used in ordinary mills.

Accurately machined double helical pinions in a patented housing reduce upkeep and result in high efficiency.

The William Tod Co.

YOUNGSTOWN, OHIO.

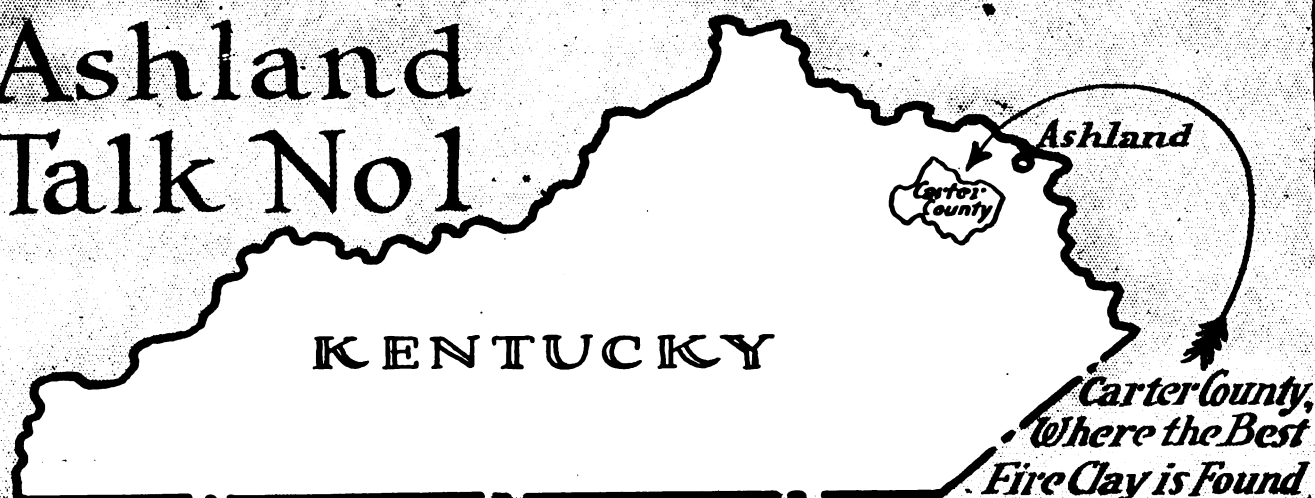
ROLLING MILLS

HYDRAULIC PRESSES, CONDENSERS.

ENGINES—Rolling Mill, Gas, Blowing, Pumping.

Cooperate:—Give us Credit.

Ashland Talk No 1



Carter County Fire Clays are admitted to be the best in the Country. There, large veins, uniform in composition, afford the best basis for your fire brick.

Without these uniform deposits an inferior product would result, no matter how much care went into the making of the brick.

Ashland care, coupled with the best raw material obtainable—Carter County Clays, produces Ashland Brick, especially fitted to each Fire Brick use—tried and proven in that service—tested beyond its operating conditions—relied upon by progressive furnace men.

Ask the man who uses them.

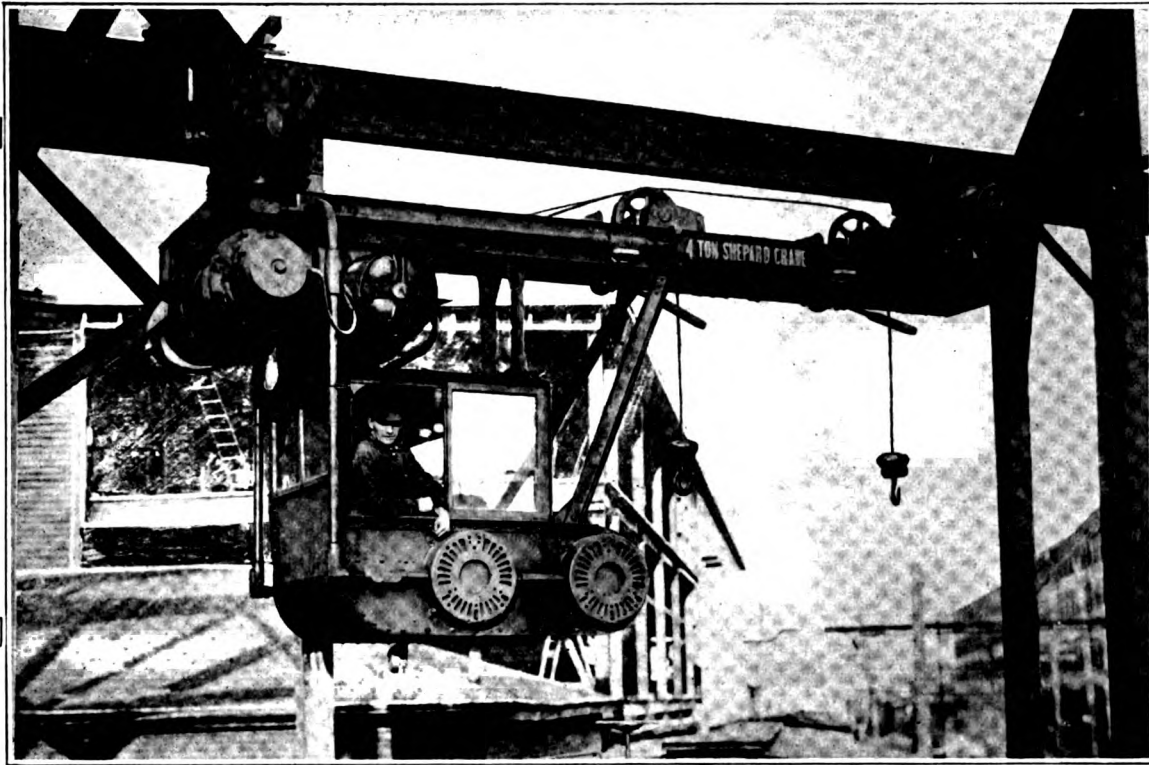
THE ASHLAND FIRE BRICK CO.

ASHLAND, - - KENTUCKY

"Line with the Ashland Line"

Cooperate:—Give us Credit.

Reduces Handling Costs



Shepard Monorail Hoist

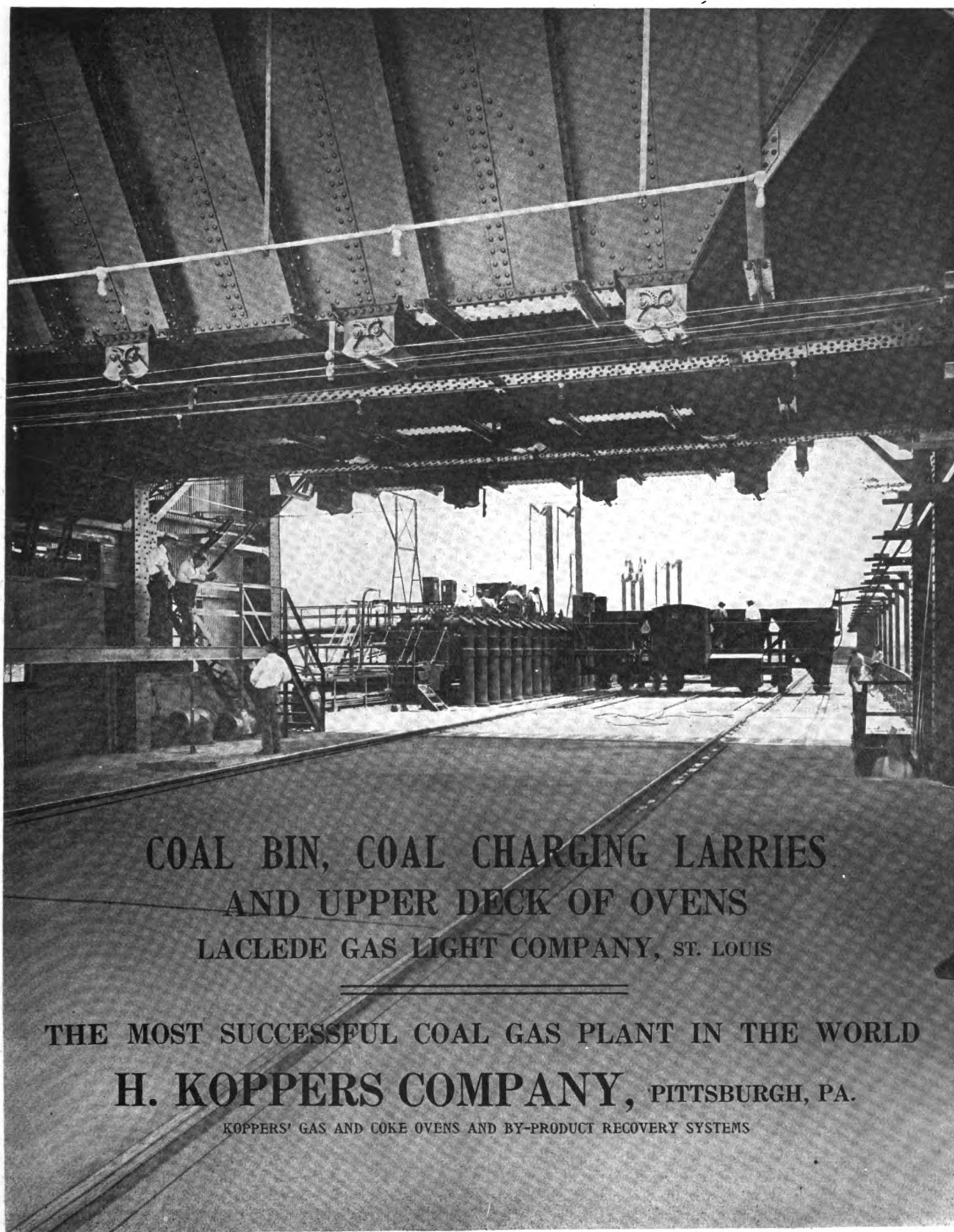
especially adapted to many uses in Steel Mill Service, operating on curves and switches, both in and out of doors—and is reducing handling costs in many plants.

The Motor Driven Trolley also incorporates the Shepard Hoist features of Complete Enclosure and Oil Bath Lubrication.

Write to-day for Bulletin No. 60 and information as to the adaptability of Shepard Hoisting equipment to your handling problems.

SHEPARD
ELECTRIC CRANE & HOIST CO.
NEW-YORK PHILADELPHIA MONTOUR FALLS, N.Y. PITTSBURG CHICAGO
BOSTON. BALTIMORE. BIRMINGHAM, ALA. SAN-FRANCISCO. MONTREAL.
MELBOURNE, AUSTRAL. LONDON.

Cooperate:—Give us Credit.



**COAL BIN, COAL CHARGING LARRIES
AND UPPER DECK OF OVENS**

LACLEDE GAS LIGHT COMPANY, ST. LOUIS

THE MOST SUCCESSFUL COAL GAS PLANT IN THE WORLD

H. KOPPERS COMPANY, PITTSBURGH, PA.

KOPPERS' GAS AND COKE OVENS AND BY-PRODUCT RECOVERY SYSTEMS

Cooperate:—Give us Credit.

TITANIUM TALKS

No. 4

It is often stated that Steel Makers are less interested in the Quality of their Product than in the Quantity—

The fact that many hundreds of thousands of tons of Steel for which Manufacturers assume full responsibility, are being treated with Ferro Carbon-Titanium each year proves conclusively the fallacy of this too-general statement.

The Titanium Alloy Mfg. Company

Niagara Falls,
Pittsburgh Office: Oliver Building
New York, City Investing Bldg., 165 Broadway



New York
Chicago Office: Peoples Gas Building
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Cooperate:—Give us Credit.

"DAMASCUS"

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Different conditions of pressure, temperature, speed and lubrication do demand different and accurate bearing mixtures. May-be in the old days the brass foundry around the corner was good enough, but to-day with ever-increasing speed and rolling pressures, guess work mixtures are not satisfactory nor even cheap, whatever the first cost may be.



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We will gladly quote you on material for which we guarantee service and economy and we know that the price will be but slightly, if any, higher than you are now paying.

Write Us To-day.

—Damascus Bronze Company—
Pittsburgh

Cooperate:—Give us Credit.

18% MORE POWER

From Your Turbo-Generators



Showing the construction of the "Spraco" nozzle.

"Spraco" Air Cooler & Washer

will permit a generator to carry about 18% greater load by cooling the air entering to the generator from 90°F. to 70°F. (Possible with air at relative humidity of from 35 to 40%).

THE increased Turbo-generator capacity possible with cool, clean air from the Spraco Air Cooler and Washer pays for the washer in 3 months and returns an additional 300% by the end of the year.

For instance; base the load at 25°C. (77°F.) as 100% then the ratio of permissible loads at 70°F. and 90°F. is 105:89. In many cases the gain is much greater as in

hot weather and where the air comes from the hot engine room.

On a 5000 Kw. machine an increase in capacity of only 5% is 250 Kw. At \$20 per Kilowatt per annum this would be an increased earning capacity of \$5,000. This increased earning for only 3 months—\$1,250, would pay for the washer and leave 300% clear on the investment.

Write for information showing how Spraco Air Cooling and Washing Systems will profit your power plant.

Spray Engineering Company

93 Federal Street

Engineers

Boston

Manufacturers

Cooperate:—Give us Credit.



An "Alliance" Gantry

This Six-Ton, Four-Motor, Single Leg, Alliance Gantry Crane, is installed in the Open Hearth Yard of the Inland Steel Company.

It is used for handling pigs and dolomite.

It has a span of 53-feet 9-inches, and the trolley is provided with two hoists, one for the magnet and one for the bucket.

There is nothing in Cranes that is too large or difficult for us to build. Large and special types are our "hobby."

"Alliance" Progressive Engineering Developments begin where others leave off.

THE ALLIANCE MACHINE CO.

ALLIANCE, OHIO

PITTSBURGH

BIRMINGHAM



*Ask for
our new
Catalog*

Coöperate:—Give us Credit.

MACKINTOSH- HEMPHILL & CO.

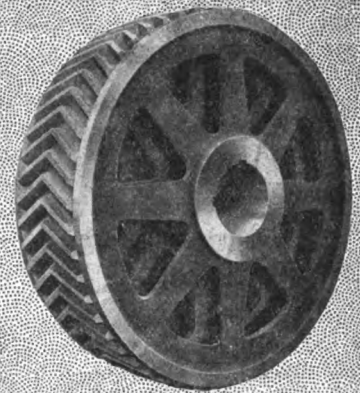
Equipment for Iron and Steel Works

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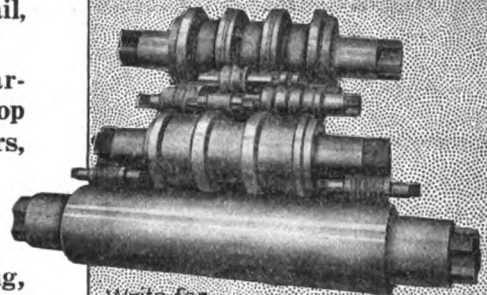
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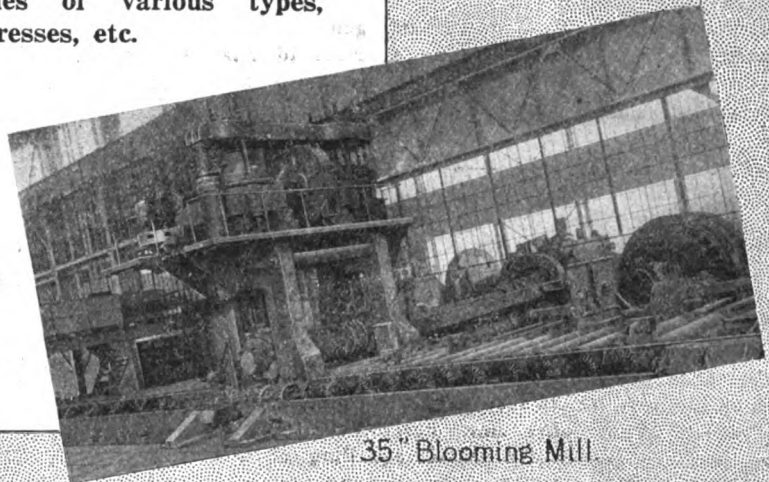


Steel Casting Helical Gear Rim,
mounted on Steel Casting Center

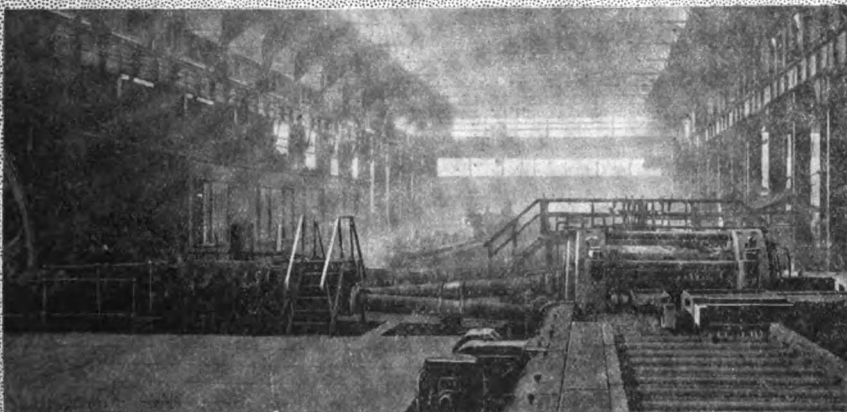


Write for
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and Manganite Rolls.

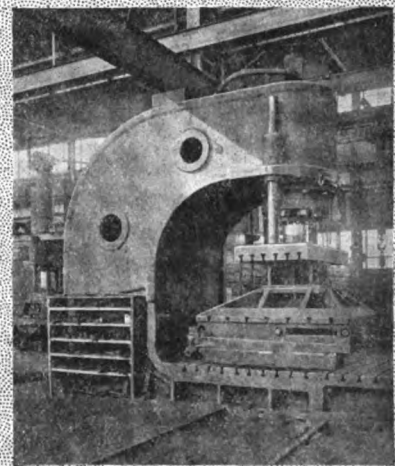
**Mackintosh-
Hemphill & Co.**
Pittsburgh, Pa.



35" Blooming Mill



26" Lambert Continuous Running Billet Mill



400-Ton Hydraulic Flanging Press

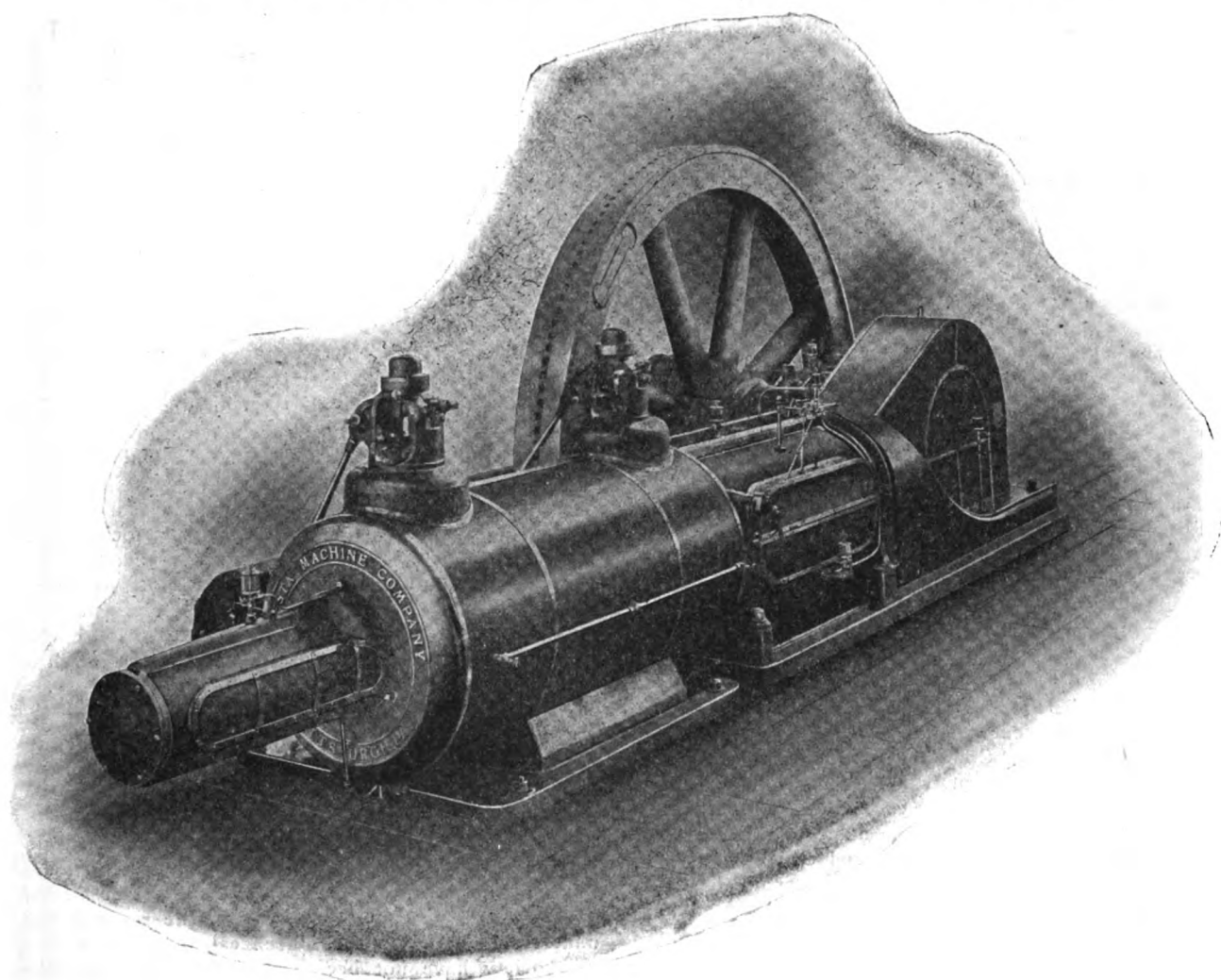
Coöperate:—Give us Credit.

MESTA UNA-FLOW STEAM ENGINES

(STUMPF PATENTS)

SIMPLE, RELIABLE, ECONOMICAL

THE IDEAL ENGINE FOR ROLLING MILL SERVICE



Mesta Una-Flow Steam Engines, using steam from modern waste heat boilers on open hearth furnaces and heating furnaces, provide, with low initial expense and with practically no fuel cost, the ideal means for driving rolling mills.

These engines are particularly desirable where condensing water is warm.

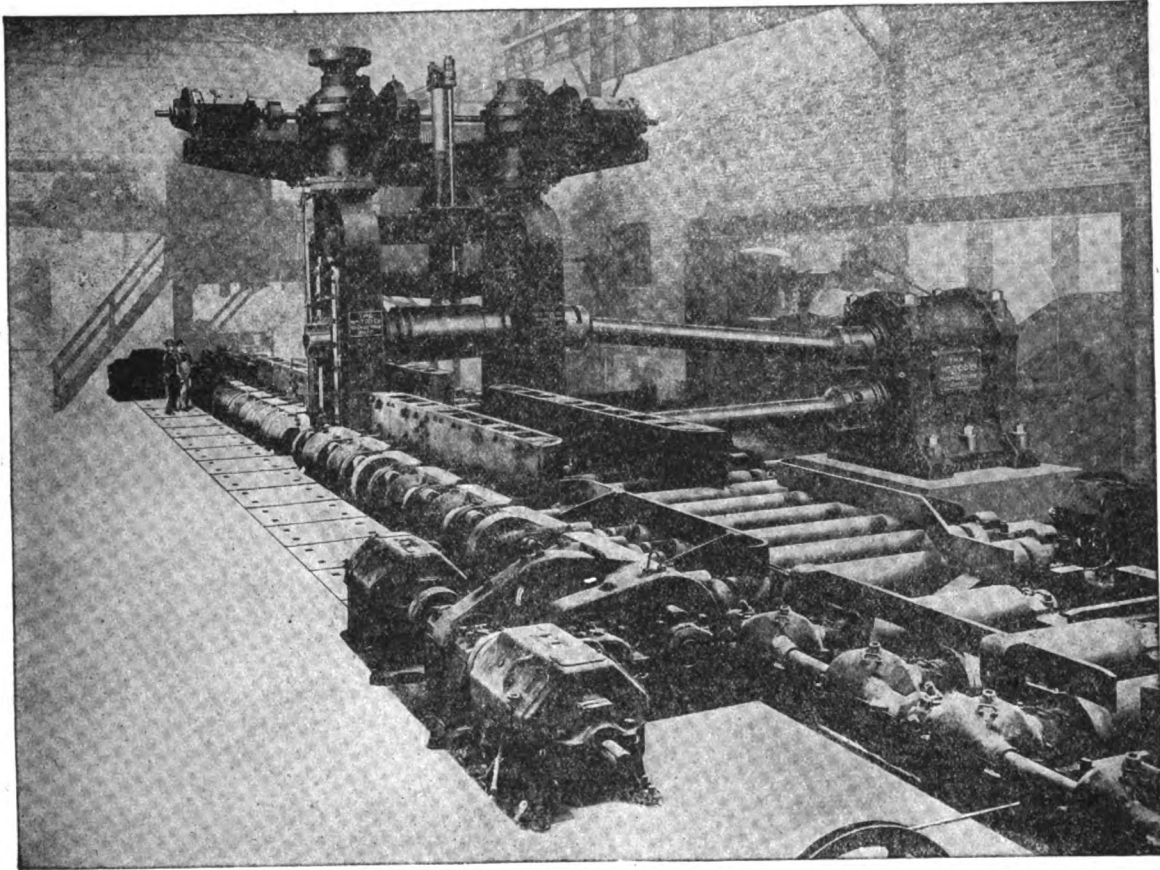
(The Mesta Machine Company is the sole licensee in the United States for building Una-Flow Steam Engines under the Stumpf Patents for driving Metal Rolling Mills.)

MESTA MACHINE COMPANY

PITTSBURGH, PA., U. S. A.

Coöperate:—Give us Credit.

Rolling Mill Machinery



Tod Blooming Mills represent engine builders' standard of design and workmanship.

Tod patented spindles eliminate shock, are easily dismantled, and save a large percentage of power used in ordinary mills.

Accurately machined double helical pinions in a patented housing reduce upkeep and result in high efficiency.

The William Tod Co.

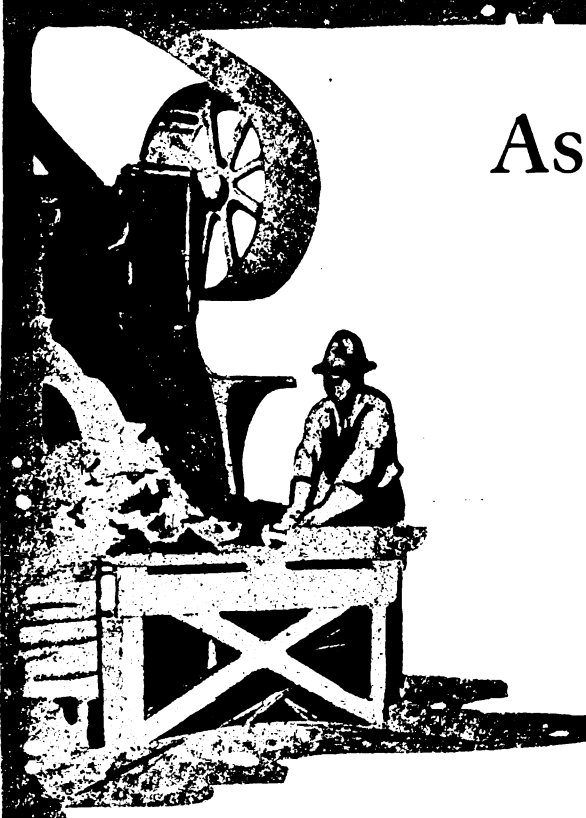
YOUNGSTOWN, OHIO.

ROLLING MILLS

HYDRAULIC PRESSES, CONDENSERS.

ENGINES—Rolling Mill, Gas, Blowing, Pumping.

Coöperate:—Give us Credit.

A black and white illustration of a worker wearing a hat and overalls, sitting on a wooden platform. Behind him is a large, spoked wheel, possibly part of a brick-making machine. The scene is set outdoors with some foliage visible.

Ashland Talk No. 2.

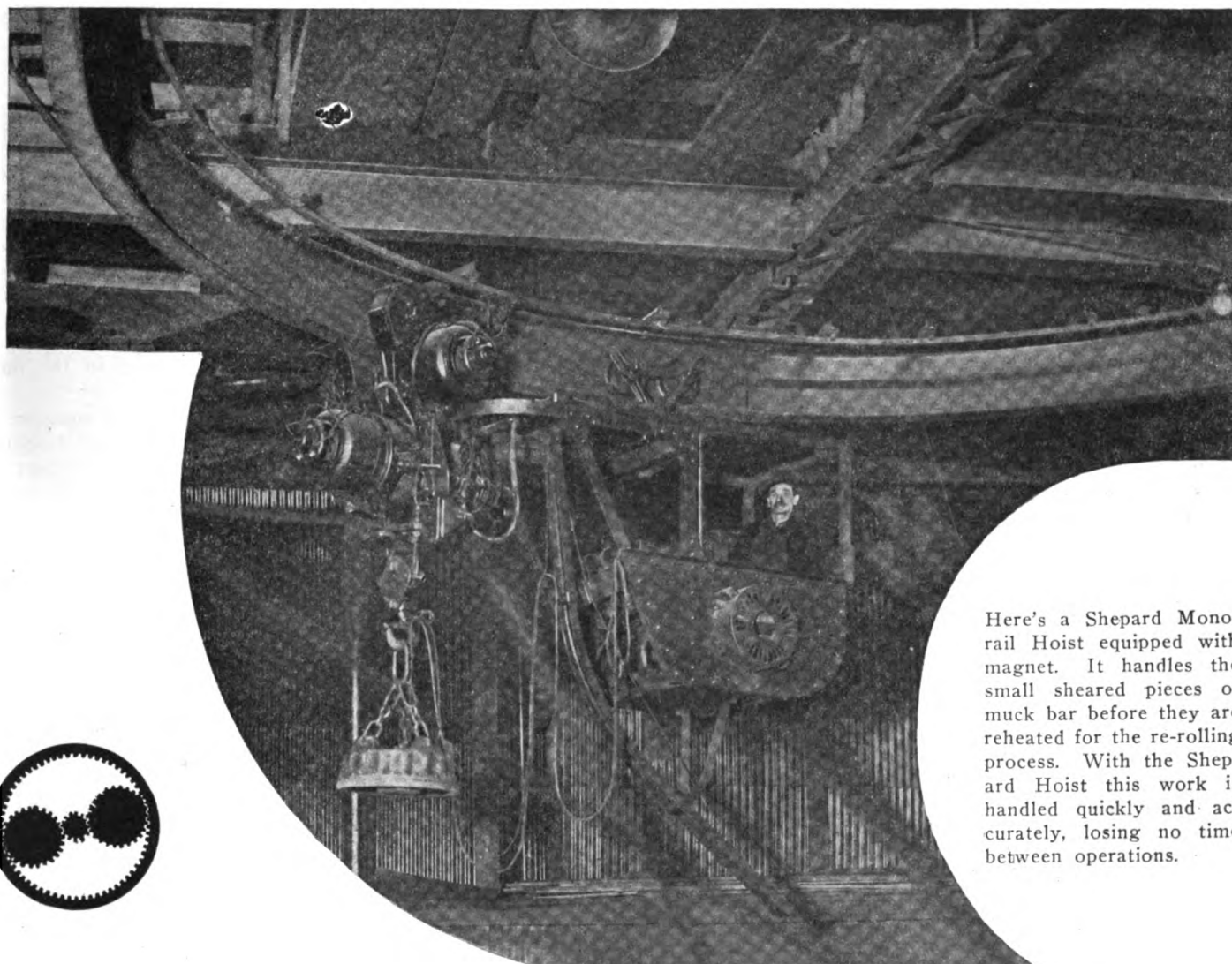
The reason why Ashland Brick do not vary—why they stand up in practice, is that every Ashland process is performed with infinite care by men trained in the business—familiar with the necessity of absolute uniformity. Molds are filled carefully by hand to remove all air, the brick are carefully dried before burning—careful, deft, intelligent handling through all the operations, with the best raw material obtainable makes Ashland Brick—constant in volume, will not shrink. Ashland Brick are used where service is most severe.

Ask the man who uses them.

Ashland Fire Brick Co.
Ashland,
Kentucky



Coöperate:—Give us Credit.



Here's a Shepard Monorail Hoist equipped with magnet. It handles the small sheared pieces of muck bar before they are reheated for the re-rolling process. With the Shepard Hoist this work is handled quickly and accurately, losing no time between operations.



Shepard Monorail Hoists

operating on curves and switches can be used to utilize out of the way corners of your plant where cranes could not be installed. The Shepard features of design—complete enclosure, automatic oil bath lubrication, **balanced drive**, motor driven trolley; keep out dirt, give long life to the hoist, low cost of maintenance and the speed you need in handling all loads.

Built in capacities from 500 lbs. to 60,000 lbs. Our engineers are glad to offer their assistance to you on your handling problems—just let us know.

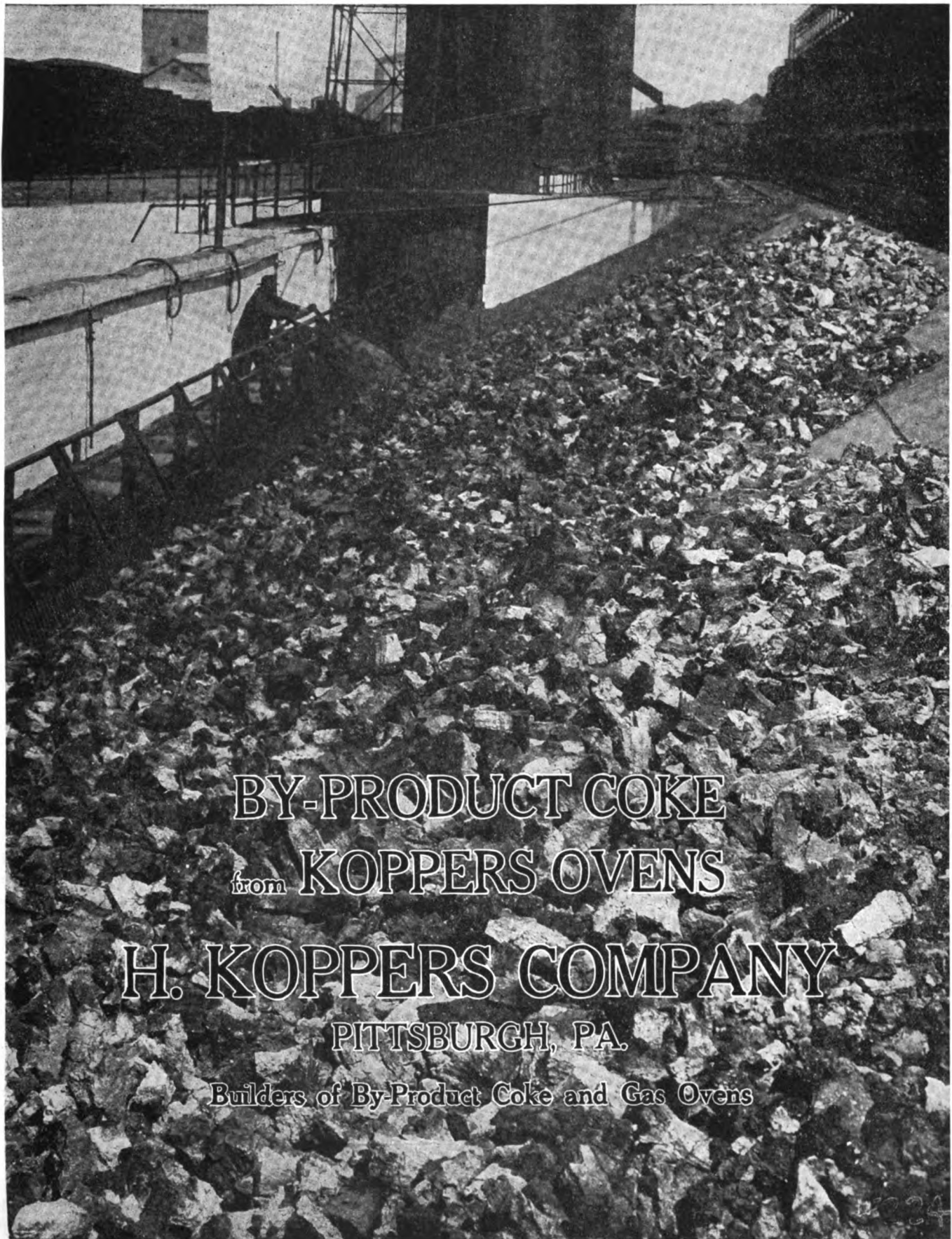


Bulletins covering Shepard Equipment on Request.

Write today for data.

SHEPARD
ELECTRIC CRANE & HOIST CO.
NEW-YORK PHILADELPHIA MONTOUR FALLS, N.Y. PITTSBURGH CHICAGO
BOSTON, BALTIMORE, BIRMINGHAM, ALA., SAN-FRANCISCO, MONTREAL,
MELBOURNE, AUSTRALIA, LONDON.

Coöperate:—Give us Credit.



BY-PRODUCT COKE
from KOPPERS OVENS

H. KOPPERS COMPANY
PITTSBURGH, PA.

Builders of By-Product Coke and Gas Ovens

Coöperate:—Give us Credit.

TITANIUM TALKS

No. 5

Users of Steel should be greatly interested to know that metallurgists and operating officials of many Steel Plants in this Country are co-operating with us in an endeavor to improve the Quality of their Steels through the regular use of Ferro Carbon-Titanium. This means Better Steel for You.

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Niagara Falls.
Pittsburgh Office: Oliver Building
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Write Us To-day.

— **Damascus Bronze Company** —
• Pittsburgh •

Coöperate:—Give us Credit.

ELIMINATES GENERATOR SHUT-DOWNS

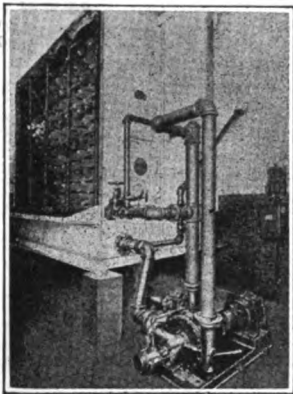
How much would be saved every year in your power plant if the generators did not have to be cleaned?

Large Turbo-Units, unproductive for ten days at cleaning, are costly, to say nothing of the interruptions or set backs to the uniform workings of the plant.

"Spraco" Air Cooler & Washer

Furnishing clean, cool air to the Turbo-generator will largely eliminate this evil of power production.

Dirt and soot, carried into the generator, besides preventing it from being properly cooled by the ventilating air, accumulate and break down the insulation resistance. Near coal mines and steel plants, carbon and iron rust, both present in large quantities, are very severe on insulation. As a large percentage of short circuits and burnouts of generators is due to the insulation resistance being broken down by foreign matter, the value of eliminating this foreign matter can readily be appreciated.



Not only will the Spraco Air Cooler and Washer deliver to the generator air free of foreign matter, but it will also cool the air to a point where the capacity of the generator may be increased to full load or even to above full load with safety.

Would you increase the efficiency of your power plant? Then send for the book—Washing and Cooling Air For Steam Turbine Generators.

SPRAY ENGINEERING COMPANY

93 Federal Street, Boston

Engineers

Manufacturers

Coöperate:—Give us Credit.



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ALLIANCE, OHIO.

PITTSBURGH

BIRMINGHAM



*Ask for
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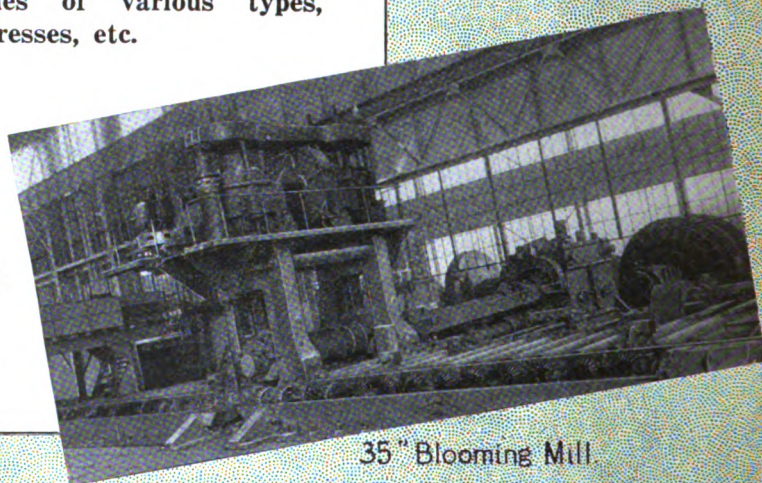
Pittsburgh, Pa.



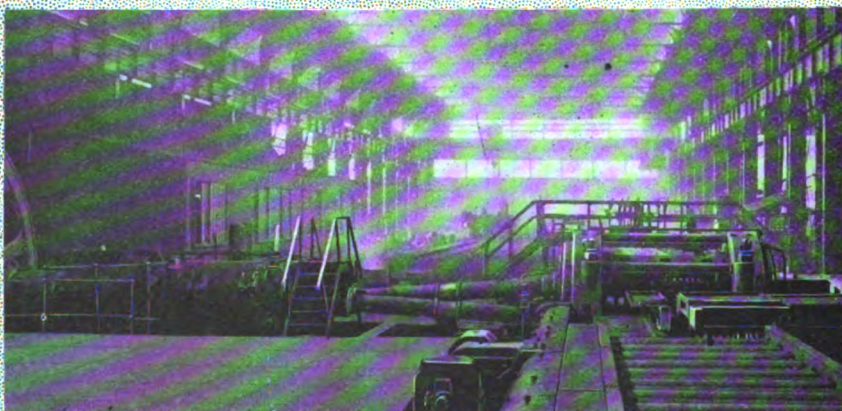
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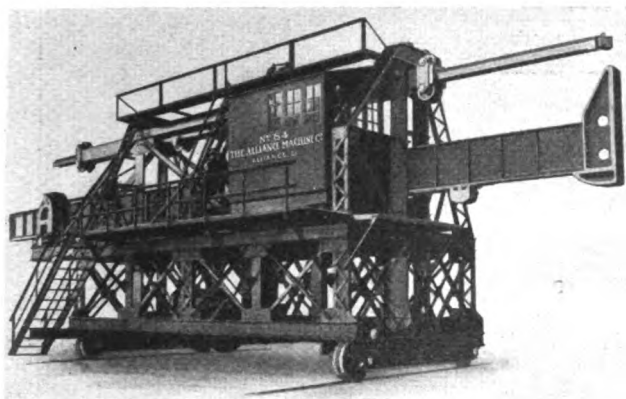
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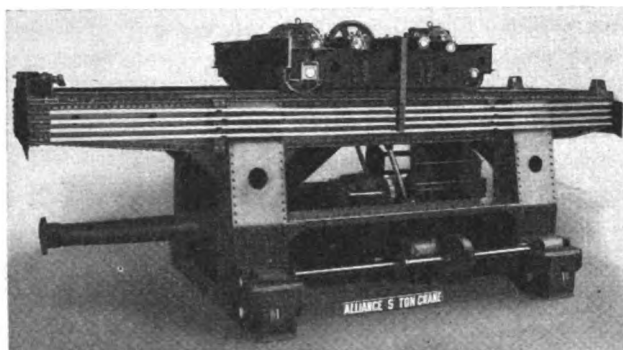


400-Ton Hydraulic Flanging Press



THE largest manufactureres of the world's largest cranes. "ALLIANCE" standard types from 5 to 200 tons capacity.

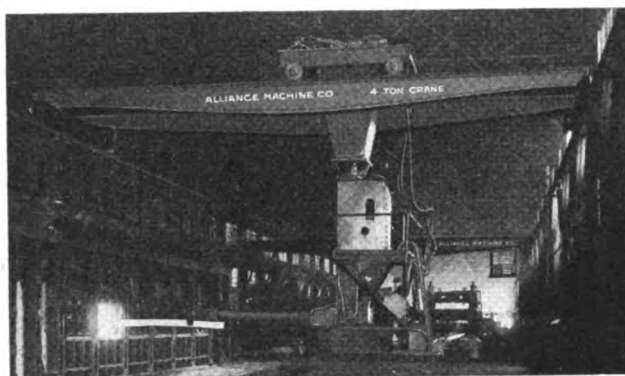
"A"



"ALLIANCE" special types of Cranes are the dependable factors in the handling equipment of the hardest worked plants.

"Alliance" Equipment

"ALLIANCE" Gantry Cranes, Ladle Cranes, Coke Pushers, Charging Machines, Soaking Pit Cranes, Ingot Strippers, Ore Bridges and other large equipment for Steel Mills, have been the accepted standards for buyers. Send for copy of our new book.

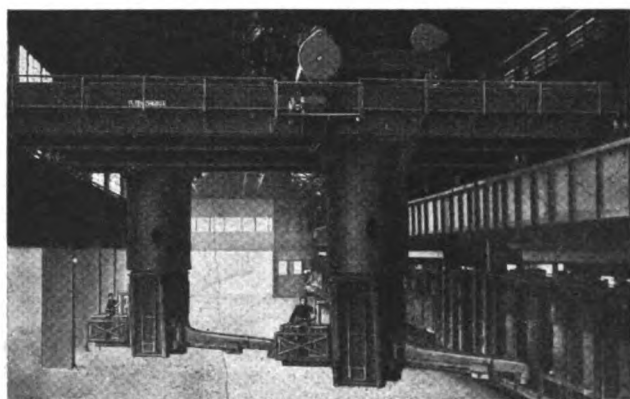


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THE ALLIANCE MACHINE CO.
Alliance, Ohio

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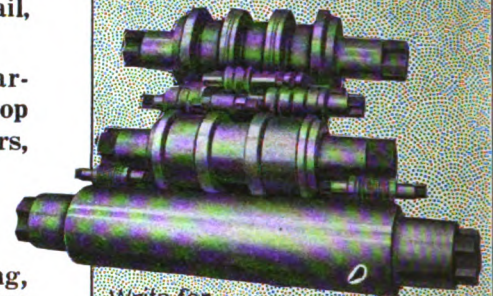
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MANGANITE (Steel Alloy) ROLLS as being of superior strength and wearing qualities, for Blooming, Billet, Structural and Continuous Mills and for Sheet Mill Roughing Rolls.

OTHER PRODUCTS.—Engines of various types, Punches and Shears, Hydraulic Presses, etc.



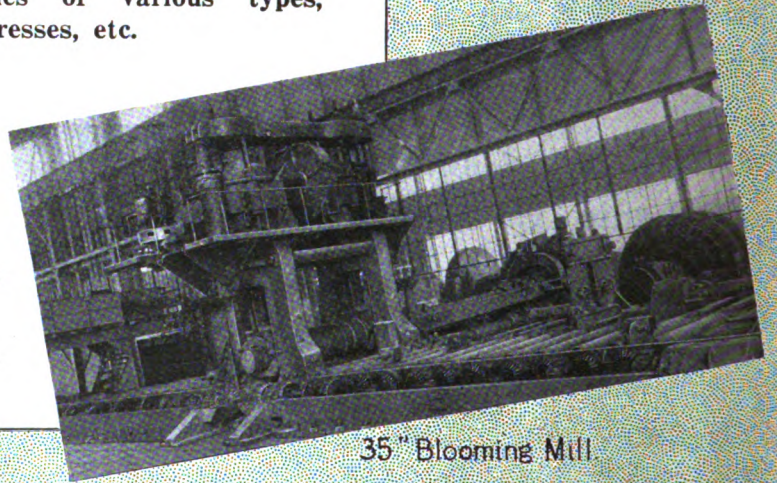
Steel Casting Helical Gear Rim,
mounted on Steel Casting Center



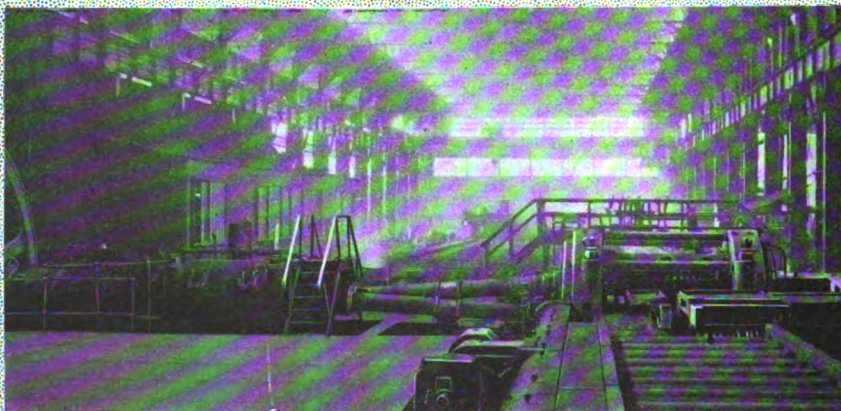
Write for
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Mackintosh- Hemphill & Co.

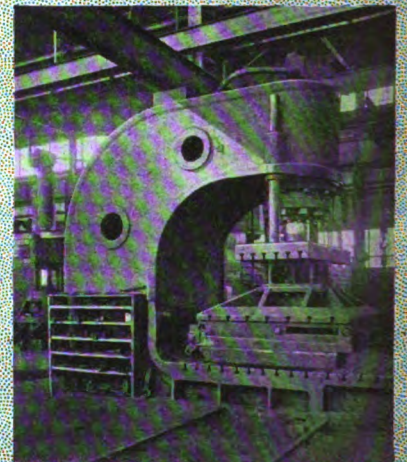
Pittsburgh, Pa.



35" Blooming Mill

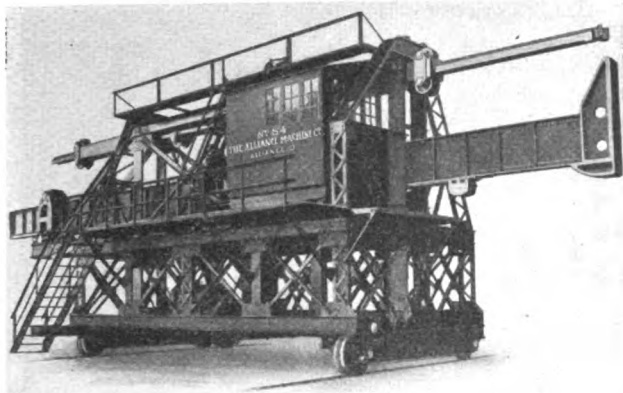


26" Lamberton Continuous Running Billet Mill



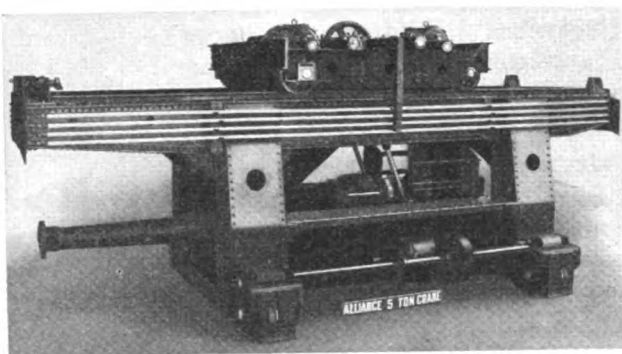
400-Ton Hydraulic Flanging Press

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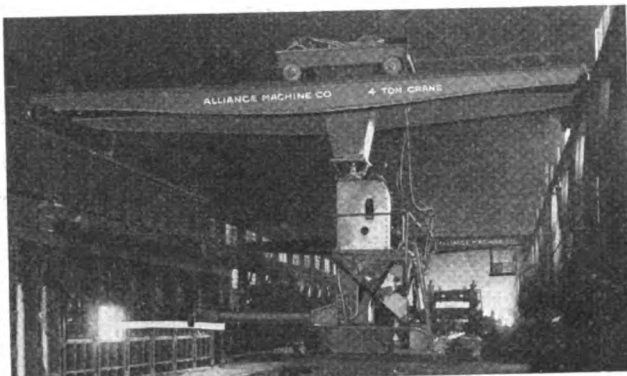
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"ALLIANCE" special types of Cranes are the dependable factors in the handling equipment of the hardest worked plants.

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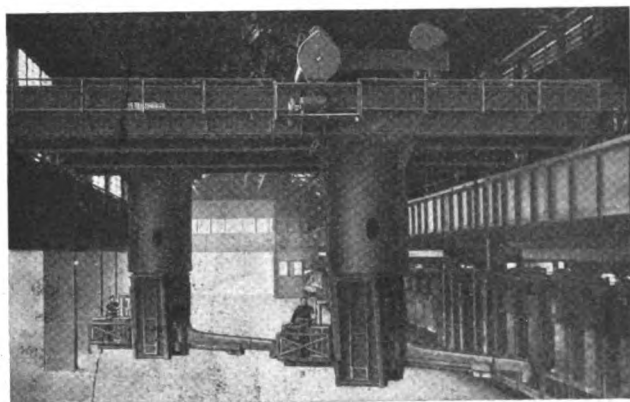


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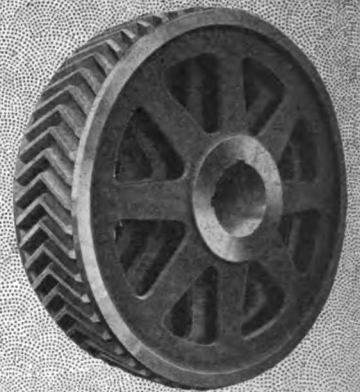
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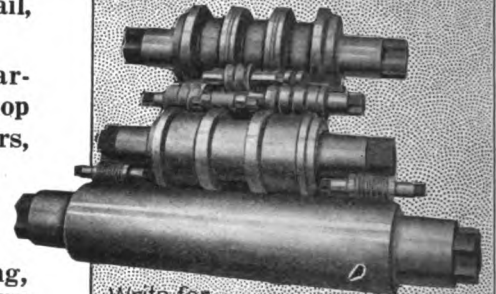
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**Mackintosh-
Hemphill & Co.**

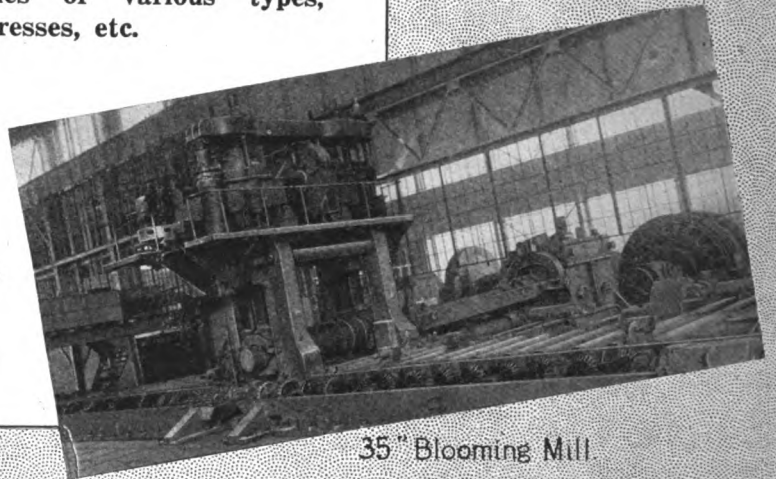
Pittsburgh, Pa.



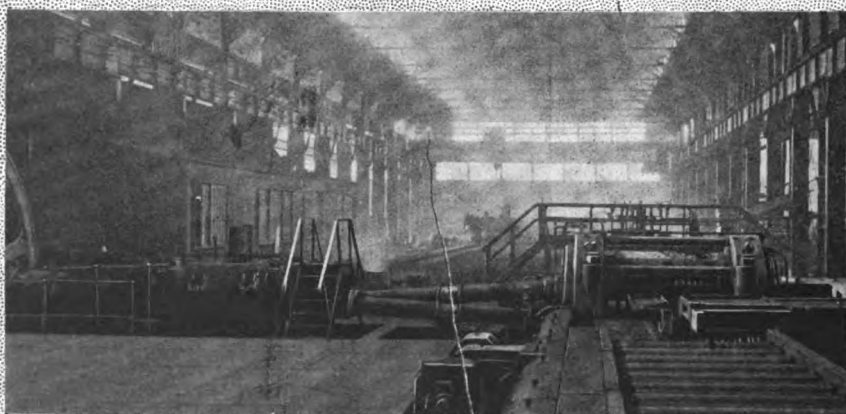
Steel Casting Helical Gear Rim,
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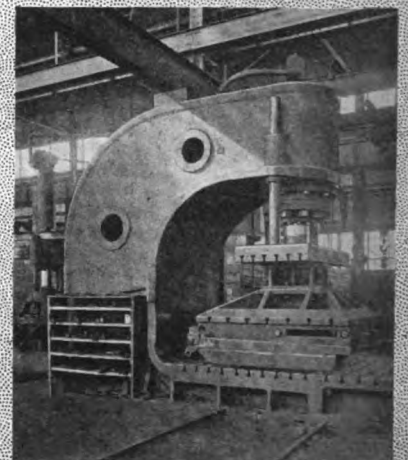
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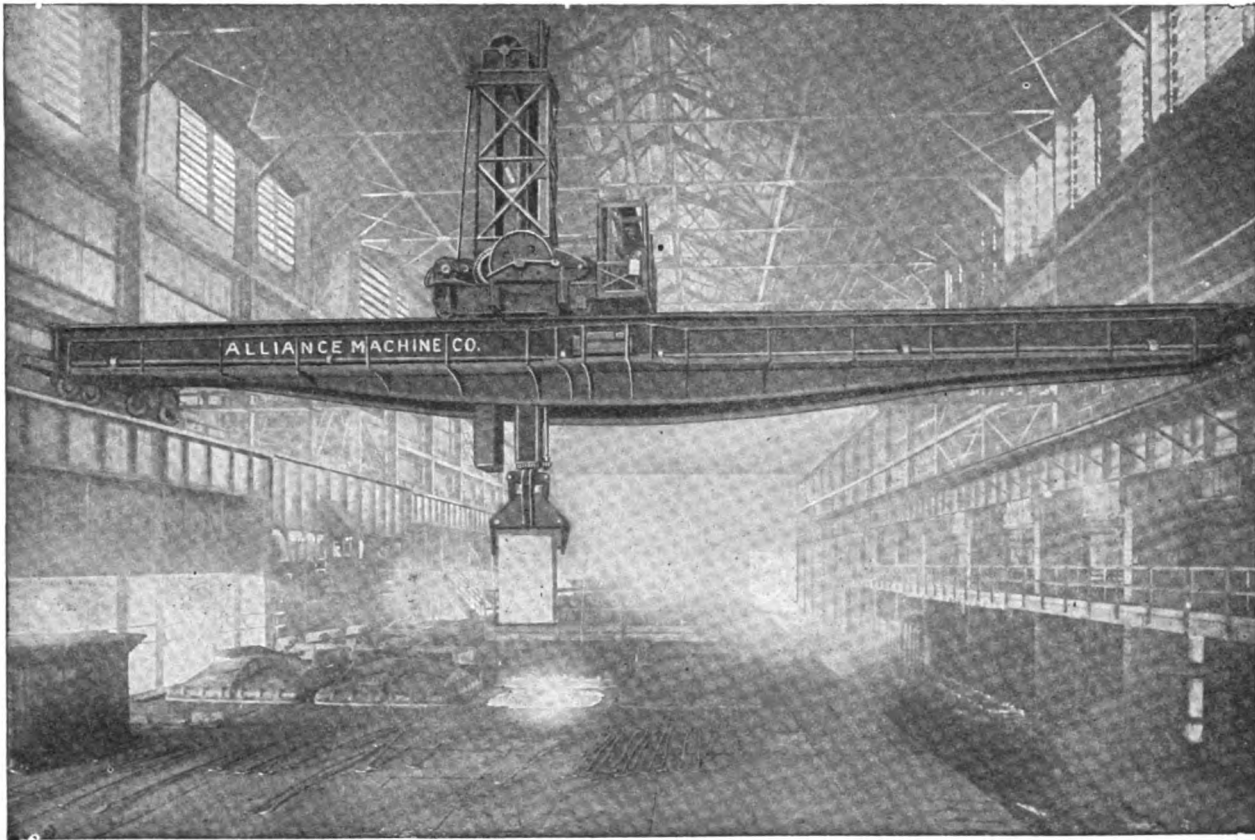


26" Lamberton Continuous Running Billet Mill.



400-Ton Hydraulic Flanging Press.

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Installation of an Alliance Soaking Pit Crane in a Large Steel Plant

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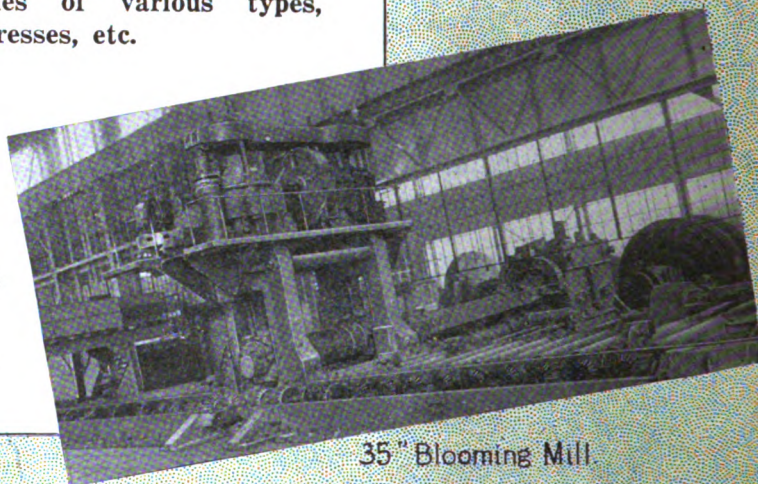
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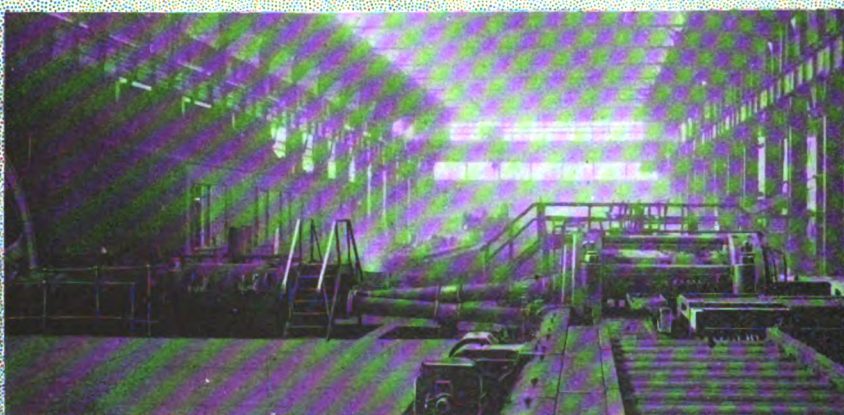
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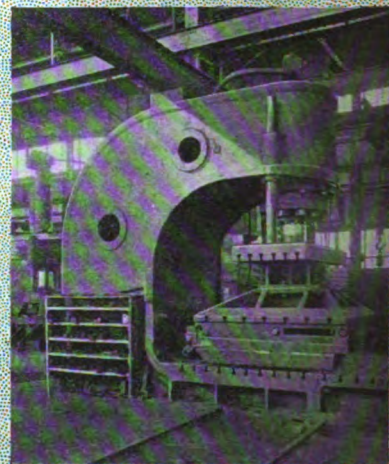
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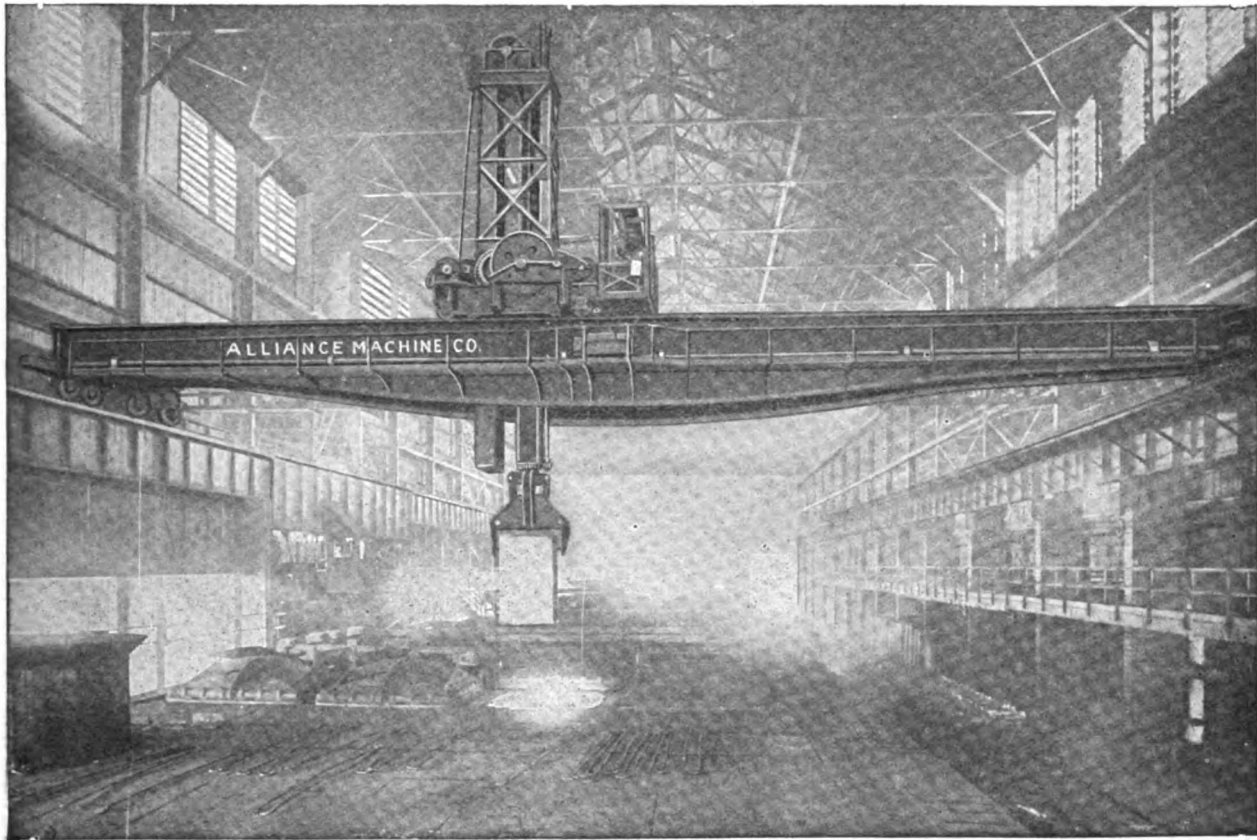
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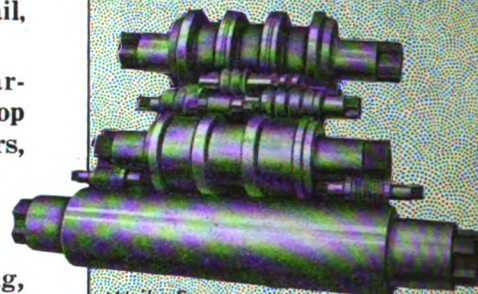
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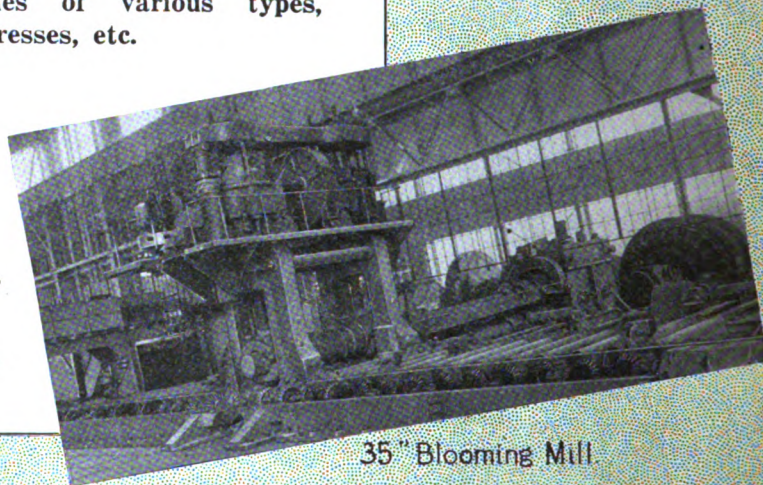
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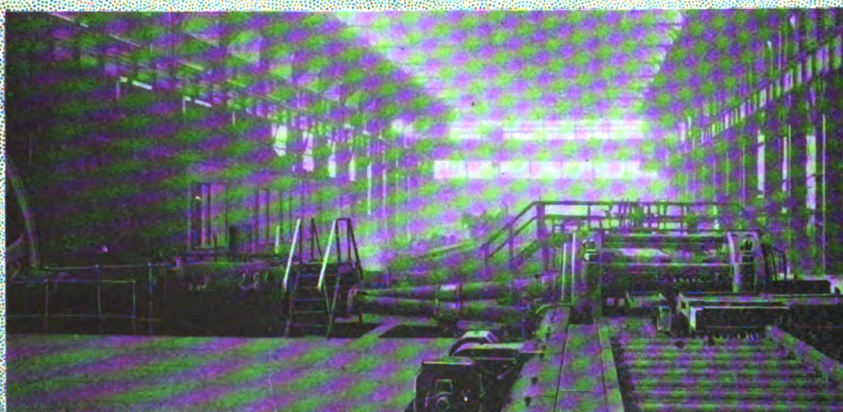
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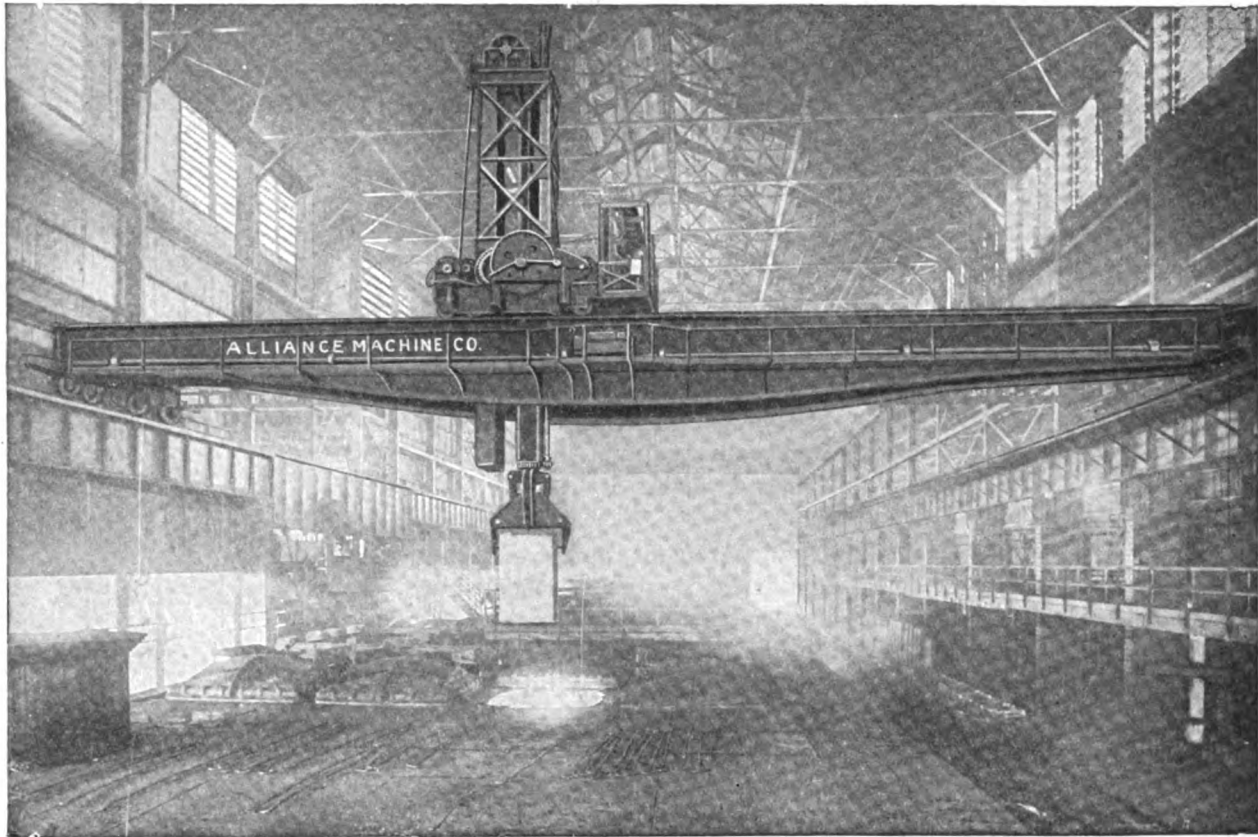
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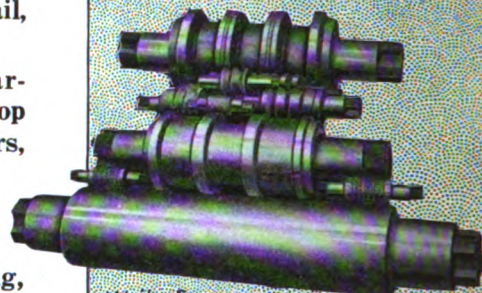
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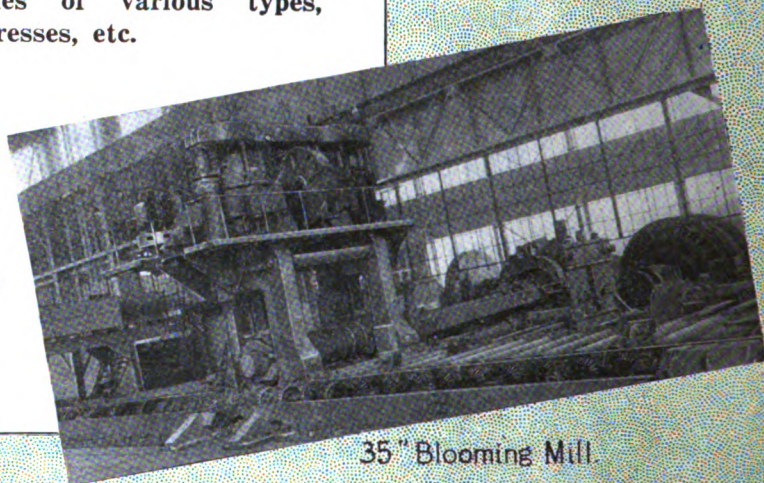
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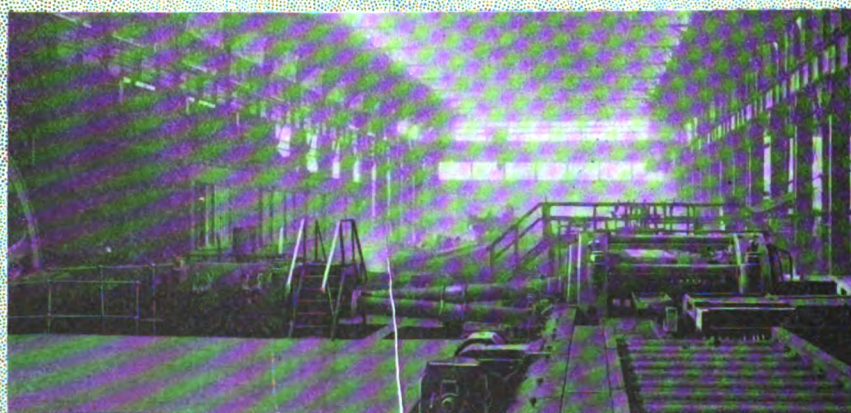
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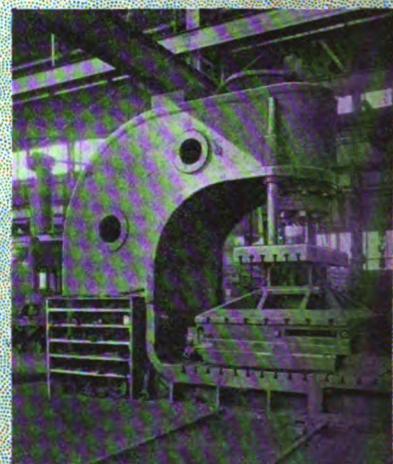
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